Engineering Library
JAN 28 1921
DETROIT PUBLIC LIBRARY

THE BUILDER

A JOURNAL FOR THE ARCHITECT & CONSTRUCTOR

VOLUME CXX. No. 4067. *Seventy-ninth Year.*
FRIDAY, JANUARY 14, 1921.
REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER
PRICE NINEPENCE. *By Post* 11d. *(This Week).*

"I have seen several different forms of Mr. Boyle's 'Air-Pump' Ventilator in actual operation, and have much pleasure in testifying to their efficiency."—LORD KELVIN.

Boyle's
LATEST "AIR-PUMP" PATENT VENTILATOR.
Has DOUBLE the EXTRACTING POWER of Earlier Forms
Awarded the £50 Prize with Grand Diploma (only prize offered), at the International Ventilator Competition, London. Highest Award, International Ventilator Competition, Paris, Two Gold Medals.
"Mr. Boyle's complete success in securing the required continuous upward impulse is testified to by high authorities."—GOVERNMENT REPORT (Blue Book).
ROBERT BOYLE & SON,
Ventilating Engineers,
64, HOLBORN VIADUCT, LONDON.
"Messrs. Robert Boyle and Son, as the founders of the profession of Ventilation Engineering, have raised the subject to the dignity of a science."—REPORT ON THE VENTILATION OF THE LONDON CUSTOM HOUSE.

HEATING
ROSSER & RUSSELL, Ltd.
(MAYFAIR 5210)
37 DUKE STREET, OXFORD STREET,
LONDON, W.1

HYDRAULIC LIFTS. SIMPLE. SAFE.
LONDON HYDRAULIC POWER CO.
HATFIELD STREET, S.E.1. HOP 4540.

THE LIFT & HOIST Co.
Sole Makers of "Premier" Rolling Shutters.
108-114, Prince Street, DEPTFORD, S.E.

WAYGOOD-OTIS LIFTS
Offices:—54-5, Fetter-lane, E.C.4 (T.N.: Holborn 2001, T.A.: "Waygood, Fleet, London"); 62-3, Lionel-street, Birmingham (T.N.: Cen. 40 Birmingham, T.A.: "Waygood, Birmingham"). Works: Falmouth-road, London, S.E.1.

LIFTS
for domestic purposes—hand-power
REVOLVING SHUTTERS
Sam'l. HASKINS & Bros., Ltd., Old St., London, E.C.1

TITAN LIFTS.
THE TITAN LIFT CO., Ltd.,
20, HIGH HOLBORN, W.C. Telephone—4687 HOLBORN

THE
EXPRESS LIFT CO., LD.
GREYCOAT STREET WORKS,
WESTMINSTER S.W.1
ALL TYPES.
'Phone: Victoria 6115 (3 lines).

EWART'S
"EMPEROR" SMOKE CURE
Cures Smoky Chimneys.
Catalogue on application.
EWART & SON, Ltd., Euston Rd., London.

MODELS OF WORKS BUILDINGS ESTATES etc.
Executed by JOHN B. THORP,
98, Gray's Inn Road (next to Holborn Hall),
Phone Holborn, 1011 LONDON, W.C.1

STEVEN'S (A.P.S.) LIFTS
A. & P. STEVEN (PROVANSIDE WORKS) GLASGOW.
London Office: 10, Charles Street, Blackfriars Road, S.E.

ELECTRIC LIFTS.
Smith, Major, & Stevens, Ltd. LONDON & NORTHAMPTON.
(Late Archibald Smith & Stevens).

ASPHALTE WORK
RAGUSA ASPHALTE Co., LD
TREDEGAR ROAD, BOW, E.3

MILD STEEL ROUNDS FOR FERRO-CONCRETE
ALL SIZES.
BARS BARS BARS
PROMPT DELIVERIES FROM STOCK.
HELICAL BAR CO., 1, VICTORIA STREET, WESTMINSTER, S.W.1 Victoria 1940 & 1941.

CHINA WOOD OIL
CHEMICALS
FINE PLYWOOD
LOWEST PRICES
ENQUIRIES SOLICITED
A. D. WAREING, 39, Gt. Tower St.,
'PHONE—CENTRAL 9141 E.C.3

BRITAIN'S BEST
ELECTRIC LIFTS
MEDWAY'S
SAFETY LIFT COMPANY
LIMITED.
Makers of High Grade Lifts for all purposes.
ELECTRIC, HYDRAULIC, HAND-OPERATED.
London Office: 1 & 2, Bucklersbury, E.C.4
Telephone: CITY 4386
WORKS: LONDON and MAIDSTONE.
BRITISH THROUGHOUT . . . Estd. 1880.

SIMPLEX LEAD GLAZING
FOR ROOFS, SKYLIGHTS & HORTICULTURAL WORK.
NO ZINC, IRON OR PUTTY USED.
No Special Contract Required.
GROVER & Co., Ltd.,
BRITANNIA ENGINEERING WORKS,
CARPENTERS ROAD, STRATFORD, E15

STOVES
THE "INTER-OVEN" (Reg'd. Trade Mark.
The ONLY Reliable Convertible Stove.
See page 1

STUART'S GRANOLITHIC
Co., Ld. (Founded 1840)
CONCRETE SPECIALISTS.
68, LINCOLN'S INN FIELDS, LONDON, W.C.

Analysis of Advertisements.

Artificial Stone—
Brookes Ltd.
Concrete Units Co.
Patent Impervious Stone
Stuart's Granolithic Co., Ltd.

Asbestos Tiles & Sheets—
Bell's United Asbestos Co.
British Everite & Asbestos Works, Ltd.
British Fibrocement Works.
British Roofing Co., Ltd.
British Uralite Co. (1909) Ltd.
Machin & Kingsley, Ltd.
Martinet Slate & Sheet Co., Ltd.
Sankey, J. H. & Son, Ltd.
Spencer, G. R. & Co.
Turner Bros. Asbestos Co., Ltd.

Asphalte—
Bradshaw's Asphalte Co. Ltd.
Bradshaw, J. H.
Ingert & Rolfe, Ltd.
Faldo's
Hobman, A. C. W. & Co., Ltd.
Limmer & Trinidad Lake Co.
Ragusa Asphalte Co. Ltd.
Val de Travers Asphalte Co.

Bells, &c—
Carr, Chas. Ltd.
Gillett & Johnston

Bituman Sheeting—
Callender, Geo. M. & Co., Ltd.
Engert & Rolfe Ltd.
McNeill, F. & Co. Ltd.
Vulcanite Ltd.
Wallis Dore Bitumastic, Ltd

Blind Cords—
Anchor Brand.
Woods, Sons & Co.

Blinds (Window, &c)—
Bryden, John, & Sons
Francis, S. W. & Co. Ltd.
Hoskins, S. & Bros.
Meighan, James & Son
Williams G. A. & Son

Boilers—
Cakebread Robey & Co., Ltd.
Danks, H. & T. (Netherton), Hartley & Sugden, Ltd.
Jenkins, Robert, & Co., Ltd.
Kimmell Chas. F. & Co. Ltd
Lumbys, Ltd.

Bricks—
Builders' Material Association
Burley, C. Ltd.
Dennis, Henry
Lawford & Sons, Ltd.
Leeds Fireclay Co. Ltd
Moler Fireproof Brick Co.
Rufford & Co.
Sankey, J. H. & Son, Ltd.
Smeed, Dean & Co. Ltd.
Ward, R. G. & Co.
Young & Son

Builders' Ironmongery—
Cakebread Robey & Co., Ltd.
Nicholls & Clarke
O'Brien, Thomas & Co.
Shaw & Carter, Ltd.
Young & Marten Ltd

Building Contractors—
Chessums, Ltd.
Higgs & Hill, Ltd.
Somerville, D. G. & Co. Ltd
Williams Howell J. Ltd

Cartage Contractors—
Bissell, J. A.
Farley
Mears, Joseph

Castings—
Atlantis Engineering Co., Ltd.
Bayliss, Jones & Bayliss, Ltd
Haywards, Ltd.
Macfarlane, W. & Co.
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Cement, Lime, Plaster—
Assoc. Portland Cement Mfrs
British Portland Cement Mfrs.
Builders' Material Association
Burley, C. Ltd.
Cement Marketing Co
Greaves, Bull & Lakin, Ltd
Kaye & Co. Ltd.
Lawford & Sons, Ltd
Martin Earle & Co.
Oxford Portland Cement, Co.
Sankey, J. H. & Son, Ltd.
Smeed, Dean & Co. Ltd.
Super Cement, Ltd.
Wouldham Cement Co.
Young & Son

Cement Waterproofing—
Bareas
Ironite Co., Ltd.
Pudlo
Prufit
Sankey, J. H. & Son, Ltd.

Clocks (Church & Tower)—
Gillett & Johnston

Chimney Shafts—
Chimneys Limited.
Danks, H. & T. (Netherton) Ltd
Furse, W. J.

Chimney Cowls, &c—
Ewart & Son, Ltd.
Farmiloe, George & Sons, Ltd
Nicholls & Clarke, Ltd.
Young & Marten, Ltd.

Concrete Houses—
Brenmers
Concrete Units Co.

Concrete Machinery—
Armstrong & Bell
Australis Pat. Concrete Block
Builders and Contractors Plant, Ltd.
Chalmers-Edina Co.
Ingersoll-Rand Co.
Liner Concrete Machinery Co.
Martin-Harvey Co.
Millars' Timber & Trading Co
Parker, F.
Parker, Winder & Achurch Ltd.
Price & Co., Frank G.
Ransome Machinery Co., Ltd.
Stothert & Pitt
Vickers, Ltd.
Whitaker, R. G., Ltd.
Winget, Limited

Coatostone—
Coatostone Decoration Co

Concrete Piling—
Simplex Concrete Piles, Ltd.
Somerville D. G. & Co. Ltd.

Concrete Specialities—
Building Products, Ltd.
Concrete Blocks, Ltd.
Concrete Units Co.
Helical Bar & Engineering Co

Concrete (Reinforced—
British Reinforced Concrete
Concrete Units Co.
Expanded Metal Co., Ltd.
Fawcett Construction Co., Ltd.
Holst & Co.
Improved Concrete Construction Co. Ltd.
Indented Bar & C. Eng. Co.
Johnson's Reinforced Concrete
Lind, Peter & Co.
Patent Impervious Stone Co.
Self-Sentering Ex. Metal.
Somerville, D. G. & Co., Ltd
Stuart's Granolithic Co., Ltd
Stewart, J. & W
Trussed Concrete Steel Co., Ltd
Walker-Weston Co. Ltd.

Contractors' Plant—
Anderson, Thomas & Co., Ld
Boyer, Henry
Builders and Contractors Plant, Ltd.
Builders' Material Association
Building Products, Ltd.
Cayless Bros. (Battersea)
Lewis & Lewis Ltd
Palmer's Travelling Cradle
Parker, F. & Co.
Rom River Co., Ltd.
Rowland Bros.
Ruston & Hornsby, Ltd.
Stephens & Carter Ltd.

Cranes, Excavators, &c.
Ruston & Hornsby, Ltd.

Damp Proof Courses—
Briggs, W., & Sons Ltd.
Building Products, Ltd.
Callender, Geo. M. & Co, Ltd.
Engert & Rolfe, Ltd.
Hobman, A. C. W. & Co. Ltd.
Ironite Co. Ltd. (The
Kerner-Greenwood & Co. (Pudlo
McNeill F. & Co Ltd
New Tylerybont Stone and Asphalte Co., Ltd.
Permanite, Ltd.
Ragusa Asphalte Co. Ltd.
Rowe & Co.
Triton (Liverpool) Ltd.
Vulcanite Ltd

Decorators' Dust Sheets—
Moore, W. & Co.

Demolition—
Boyer, Henry
Cowell, A. E. & Co.
Greenham, Henry J.

Doors (Iron, Steel, &c)—
Anderson, Thomas & Co., Ld
Brown, H., Ltd.
Bryce, White & Co.
Dennison, Kett, & Co. Ltd
Gibson, Arthur L.
Haywards, Ltd.
Hobbs, Hart, & Co. Ltd.
Lift and Hoist Co
Mather & Platt, Ltd
Stavers & Robinson
Van Kannel Revolving Door Co

Door Hangers & Rollers—
Bousfield's Ironworks.
Nicholls & Clarke, Ltd.
O'Brien, Thomas, & Co.
Parker, Winder & Achurch
Young & Marten Ltd

Door Springs and Hinges—
Nicholls & Clarke, Ltd.
Young & Marten Ltd

Drawing Instruments—
Baker C.
Clarkson's

Dressers, etc.
Crowe, G. E. W.

Electric Lamps—
Mazda.

Electric Lighting & Fittings—
Dalzen Engineering Co.
General Electric Co., Ltd.
Mather & Platt, Ltd
Sims & Sims
Tredegars Ltd
Troy & Co. Ltd.
Underwood (Manchester), Ltd.

Engines, Mortar Mills—
Lewis & Lewis, Ltd.

Facias, &c.—
Francis, S. W. & Co. Ltd.
Haskins, S., & Bros., Ltd.

Felt—
Anderson, D. & Son, Ltd
Engert & Rolfe, Ltd.
Gibson, Arthur L.
McNeill F. & Co. Ltd.
Sankey, J. H. & Son, Ltd.
Triton (Liverpool) Ltd.

Fencing (Wood, &c.)—
Fernden Fencing Co, Ltd
Ford, H. J.
"Invicta" Fencing Co.
Neville Hine & Co.
Rowland Bros.

Fibre for Mixing—
Woods, Sons and Co

Fire Escapes, Staircases—
Clark, Hunt, & Co. Ltd.
Davis, H. & C. & Co. Ltd.
Haywards, Ltd.
Lift and Hoist Co

Fireproof Flooring, &c.—
Bell's United Asbestos Co.
British Reinforced Concrete
Building Products, Ltd. (Ferrolithic)
Dawnay, A. D. & Sons, Ltd
Expanded Metal Co. Ltd
Haywards Ltd.
Homan & Rodgers, Ltd.
Ironite Co. Ltd.
King, J. A. & Co
Kleine Pat. Flooring Co. Ltd
Moler Fireproof Brick & Partition Co., Ltd.
Sankey, J. H. & Son Ltd.
Siegwart Fireproof Floor Co.
Somerville D. G. & Co. Ltd.
Thermos Flooring Co. Ltd

Flint Paper—
Oakey, J. & Sons, Ltd.

Folding Partitions—
Educational Supply Assoc. Ld
Lift and Hoist Co
Thornborough & Co. Ltd.

Garden Hose—
Wilcox, W. H. & Co. Ltd.
Woods, Sons & Co.

Gates (Collapsible)—
Acme Metal Works
Bostwick Gate Co., Ltd.
Dennison, Kett, & Co. Ltd.
Haywards, Ltd.
Lift and Hoist Co
Thornborough & Co, Ltd.

Gates, Railings (Iron), &c.—
Bayliss, Jones & Bayliss, Ltd.
Haywards, Ltd.
Nicholls & Clarke Ltd.
Young & Marten, Ltd.

Glue (Liquid)—
Croid
Pactol

Glue (Powder)—
Lactocol

Glass (Plate & Window—
British Luxfer Prism Synd.
Clark J. & Son, Ltd.
Eaton, Parr & Gibson, Ltd.
Farmiloe, George & Sons, Ltd.
Haywards, Ltd.
King, J. A. & Co
Newton, J. M. & Sons, Ltd.
Nicholls & Clarke,
Pilkington Bros., Ltd.
Young & Marten Ltd.

Glass Paper—
Oakey J. & Sons. Ltd

Glass (Stained, Painted)—
British Luxfer Synd., Ltd.
Clark, J. & Son
Farmiloe, George & Sons, Ltd
Gibbs, W., & Sons, Ltd.
Haywards, Ltd.
King, J. A. & Co.
Nicholls & Clarke
Young & Marten Ltd

Glazing—
Braby, F. & Co. Ltd.
British Luxfer Synd., Ltd.
Farmiloe, George & Sons, Ltd.
Grover & Co. Ltd.
Haywards, Ltd.
Helliwell & Co. Ltd.
King, J. A. & Co.
"Metacon" Patent Glazing
Nicholls & Clarke, Ltd.
Partridge, T. & Co.
Wotton & Son
Young & Marten, Ltd

Gutter Brackets—
Parker Winder & Achurch

Heating and Lighting—
Aerogen Co., Ltd.
Central London Electrical
Clark, Hunt, & Co., Ltd.
Dunham Co., Ltd., C. A.
Ewart & Son, Ltd.
Hartley & Sugden Ltd.
Haywards, Ltd.
King & Co., Ltd.
Kinnell Chas. P. & Co., Ltd.
Martin, W. C. & Co.
Messenger & Co.
Murray, S. D. & Co., Ltd.
Musgrave & Co. Ltd.
Nicholls & Clarke, Ltd.
Rosser & Russell Ltd.
Self Engineering Co., Ltd.
Spensers, Ltd.
Walker, H. & Son, Ltd.
Young & Marten Ltd

Hot Water Supply—
Clark, Hunt & Co. Ltd.
Dargue, Griffiths & Co., Ltd.
Ewart & Son, Ltd.
Fildes, Thos.
Jenkins, Robert & Co. Ltd.
Keith, James, & Blackman
Martin Engineering Co., Ltd.
Murray, S. D. & Co., Ltd
Potterton, Thos.
Rosser & Russell, Ltd.

Hydraulic Power—
London Hydraulic Power Co.

Insurance—
London and Lancashire Fire
Somers, R. G.
Timber Trades Mutual Accident

Ironite—
Ironite Co. Ltd.

Joinery, Mouldings, &c.—
Austins (East Ham & Ilford)
Baltic Saw Mills Co. Ltd.
Boulton & Paul, Ltd.
Bowman, M.
Central Aircraft Co.
Easton & Co., A. J.
Falcon Works, Ltd.
Foulds, Arthur, Ltd.
Gosport Cabinet & Joinery Works
Henry, George & Co.
Heal & Son
Hobbs, W. J.
Holt, J. & Son.
Jennings, C. & Co.
Middlesex Joinery Works Ltd
Newman, John, Ltd.
Ogilvie & Co.
Orfeur, C. E. Ltd.
Peacock, Chas. & Co.
Roach, H.
Slade, Geo. & Co., Ltd.
Thornborough & Co. Ltd.
Tucker, W. Duncan, & Sons
West Heath Joinery Works.
West London Timber & Moulding Co. Ltd.

Jointless Flooring—
Bell's United Asbestos Co.
Brentford Construction Co.
British Dolomeut Co. Ltd
Durato
Ebner, J. F.
King, J. A. & Co.
Thermos Flooring Co. Ltd
Walker, Chas. & Co.
Wilfley Co. Ltd.

Ladders—
Acme Patent Ladder Co.
Cayless Brothers (Battersea)
Drew, Clark & Co.
Finch, M. & Son
Lawford & Sons, Ltd.
Parker & Co.
Stephens & Carter
Troll pe & Coils, Ltd

Laundry Appliances—
Bradford, T. & Co. Ltd

Letters, &c.—
Francis S. W. & Co. Ltd.

Lead, Oil, Colours, Size, &c
Builders' Material Association
Farmiloe, G. & Sons, Ltd.
Farmiloe, T. & W. Ltd.
Girdler, J. & Co.
Nicholls & Clarke
Triton (Liverpool) Ltd.
Young & Marten, Ltd.

Lifts, Hoists, Cranes, &c.—
A. & A. Electrical Co. Ltd.
Bydes John, & Sons
Dennison, Kett & Co., Ltd
Express Lift Co., Ltd.
Haskins, S. & Bros. Ltd.
Lewis & Lewis, Ltd.
Lift and Hoist Co.
Modway's
Smith, Major & Steven, Ltd
Steven, A. & P.
Titan Lift Co. Ltd.
Vaughan Crane Co., Ltd.
Waygood-Otis Ltd.

Lightning Conductors—
Aldington, G.
Furse, W. J.

Locks, Latches, &c.
Hobbs, Hart & Co. Ltd
Nicholls & Clarke, Ltd
Shaw & Carter, Ltd.
Young & Marten Ltd.

Machinery—
Johnson C. H. & Sons, Ltd
Parker, F.

Marble—
Bomert, Teves and Blankley
Ebner J. F.
Kelly & Co
Manu-Marble Co.
Moore, M. & E.
Walker, Chas. & Co.
Webb, Percy C., Ltd.

Metal Casements—
Avis, W. A.
British Luxfer Syndicate, Ltd.
Crittall Manufacturing Co.
Etherton & Williams,
Farmiloe, George & Sons Ltd
Haywards, Ltd.
Nicholls & Clarke Ltd.
Oldaker, W. & J. H.
Standard Metal Windows Co.
Young & Marten, Ltd.

Metal Work—
Marshall, R. E. & C. Ltd.
Shrivell, Wm., Ltd.
Thornborough & Co., Ltd

Model Makers—
Partridge, L. H.
Thorp, J. B.

Mosaic Work—
Brookes, Ltd.
Ebner, J. F.
Jackson, Geo. F.
Maw & Co. Ltd.
Moore, M. & E.

Motor Vehicles, Transport—
Birch Bros.
Bunford & Co., Ltd.
Commercial Cars Ltd.
Keith & Boyle (Ldn.), Ltd.
London & Midland Motors, Ld
Mann's Pat. Steam Cart and Wagon Co.
Slough Trading Co., Ltd.
Tilling, Ltd.
Tuke & Bell, Ltd.

Paints, Stains, Varnish—
Aspinalls, Ltd.
Berger, Lewis, & Sons, Ltd.
Builders' Material Association
Clark, Robt. Ingham & Co. Ld.
Cory, Horace & Co., Ltd.
Cuirass Products, Ltd.
Dixon's White, Ltd.
Farmiloe, George & Sons, Ltd.
Farmiloe, T. & W. Ltd.
Gay R. & Co., Ltd
Gustinous White Co.
Hall, John & Sons, Ltd.
Nicholls & Clarke, Ltd.
Nobles & Hoare, Ltd.
Rose, Sir A. W. & Co., Ltd.
Sankey, J. H. & Sons, Ltd.
Silicate Paint Co.
Stephens, H. C.
Triton (Liverpool) Ltd.
Young & Marten Ltd

Parquet Flooring—
Artistic Flooring and Decorating Co
Damman & Co.
Ebner, J. F.
Turnin's
Walker, Chas. & Co.

Partitions, Slabs, &c.—
British Uralite Co. (1909
Builders' Material Association
Concrete Blocks, Ltd.
Concrete Units Co.
Educational Supply Co. Ltd.
Expanded Metal Co. Ltd.
Jones, Fredk. & Co. Ltd.
King, J. A. & Co.
Lawford & Sons, Ltd.
Muribloc (Partition Slabs) Ltd.
Sankey, J. H. & Sons, Ltd.
Thames Mills
Wright, J. & Co.

Pavement, &c., Lights—
British Luxfer Prism Synd., Haywards, Ltd.
King, J. A. & Co

Picture Cords—
Anchor Brand
Woods, Sons & Co

Pipe Yarns—
Woods, Sons & Co.

Pumps, Pumping Engines—
Barclay, James
Boulton & Paul, Ltd.
Braby, F. & Co. Ltd
Phœnix Engineering Co Ltd.
Pulsometer Engineering Co
Willeox, W. H. & Co Ltd.

Rawlplugs—
Rawlplug Co.

Rooflights—
Braby, F. & Co. Ltd.
British Luxfer Prism Synd.

Roofing Compounds—
Baxendale & Co., Ltd. "Tezo."
Callender, Geo. M. & Co., Ltd.
Cuirass Products
"Farotex."
Triton (Liverpool), Ltd
Reparo, Ltd.

Roofing (Felt)—
British Roofing Co. Ltd.
Certain-teed Products
Cuirass Products, Ltd.
McNeill, F. & Co. Ltd.
New Tylerybont Stone and Asphalte Co., Ltd.
Vulcanite Ltd.

Roofings (various brands)
"Alligator" (British Roofing Co. Ltd.)
Certain-teed Products
"Challenge" (Briggs & Sons)
"Lion" (F. McNeill & Co.)
"Rok" (D. Anderson & Son, Ld
"Ruberoid" (Ruberoid Co. Ld)
"Triton," Triton Ltd.
"Vulcanite" (Vulcanite Ltd)

Roofs (Zinc and Copper—
Braby, F. & Co. Ltd.
Ewart & Son, Ltd

Ropes (Fall and Scaffold)—
Brown, J. H. & Co.
Bullivant & Co., Ltd.
Woods, Sons & Co.

Safes—
Hobbs, Hart, & Co. Ltd.
Tann, John Ltd.

Sand, Gravel, &c.
Bennett, John
Boyer Henry
Concrete Units Co.
Hoddesdon Sand Pits, Ltd.
Lawford & Sons, Ltd.
Sankey, J. H. & Sons., Ltd.
Stanwell Silica Co., Ltd.
Stokes, J. W. G.

Sanitary Appliances and Ware—
Andrew & Nanson
Builders' Material Association
Burn Bros.
Cakebread Robey & Co., Ltd.
Denton & Co. Ltd.
Emanuel, A. & Sons, Ltd.
Farmiloe, George & Sons Ltd
Haywards, Ltd.
Jennings, Geo., Ltd.
Leeds Fireclay Co. Ltd
Macfarlane, W. & Co.
Nicholls & Clarke
Rufford & Co
Sankey, J. H. & Son, Ltd.
Sessions & Sons, Ltd
Thames Bank Iron Co, Ltd.
Young & Marten Ltd

Sash Lines, Cords, &c.—
Anchor Brand
Brown, J. H.
Woods, Sons & Co.

Scaffolding—
Hobbs, W. J.
Humphries Patent Bracket
Lawford & Sons, Ltd
Palmer's Travelling Cradle
Parker, F. & Co.
Patent Rapid Scaffold Tie Co.
Spencer's Travelling Scaffold.
Stephens & Carter
Tubular Scaffolding Co.

Scrap Metals—
Buyers of Scrap Metals Ltd.

Settings for Boilers, &c.
Aldington, G.
Danks, H. & T. (Netherton) Ld.

Sculptors—
Graham, J. P.

Sewage Purification—
Haigh Wilson & Co.
Tuke & Bell Ltd.

Shop Fronts (Metal & Wood)
Francis, S. W. & Co. Ltd.
Haskins, S. & Bros. Ltd.
Jones, Stanley & Co.
Sage, Fredk. & Co., Ltd.

(Continued on page vi.)

CONTRACTORS TO H.M. OFFICE OF WORKS AND VARIOUS COUNCILS.

GEO. SLADE & CO. Ltd.

BARNSBURY PARK, LONDON, NORTH 1.

SOLICIT ENQUIRIES FOR

HARD AND SOFT WOOD JOINERY

STAIRCASES HANDRAILS GENERAL TURNERY

OFFICE FURNITURE—

FILING CABINETS. FLAT TOP AND BANKERS' LOW ROLL DESKS. ORDINARY AND DROP ACTION TYPIST TABLES. BOARD ROOM AND OFFICE TABLES ETC.

Phone: NORTH 199

EACH DEPARTMENT SEPARATE AND DISTINCT AND UNDER THE SUPERVISION OF EXPERTS

BUILDING WORK—

REINFORCED FACTORIES AND CONCRETE HOUSES. ALTERATIONS AND REPAIRS. PUBLIC AND PRIVATE BUILDINGS. LIGHT IRONWORK. OXYACETYLENE CUTTING & WELDING.

THE BUILDER

A JOURNAL FOR THE ARCHITECT AND CONSTRUCTOR.

WITH WHICH IS INCORPORATED THE "BRITISH ARCHITECT."

VOL. CXX.—No. 4067. JANUARY 14, 1921.

HOUSING PROGRESS.

NO advantage will accrue at this juncture from a discussion on the merits or demerits of the Housing Act of 1919; political opinions notwithstanding, it is the duty of all to endeavour to assist in the supply of houses, for upon this supply the health, the prosperity, and the contentment of the nation in no little degree depend.

An undoubted set-back in the provision of houses during the past year, and one that was certainly not contemplated, was the inimical attitude of the building trade operatives who, instead of co-operating in a vast scheme by the success of which they would be the first to benefit, chose rather to adopt tactics which have had the unfortunate effect of delaying progress. Another difficulty was the supply of materials, and in order to utilise new materials and local resources a large number of new methods of construction have been carefully examined, many of which are proving very successful. Experiments have also been made with a view to reviving old local building methods that had almost become extinct owing to the facilities that existed before the war for transporting bricks in large numbers to any part of the country. Despite these difficulties, progress has been made during the year, and the rate tends to increase. Thus, at the end of 1919, five months after the passing of the Act, 253 houses were completed in England and Wales. During the quarters ending March, June, and September last year the number of houses completed was 1,070, 2,790 and 5,357 respectively, and the total number of houses completed on December 1 was 16,187. These figures are exclusive of Army huts converted into temporary dwellings, and exclusive of any houses that may have been built by private enterprise, and for which the Government subsidy has not been paid. On November 17 the number of houses actually under construction was about 81,000, while the total number of houses included in signed contracts by local authorities on December 11 was 133,301; the latter figure is exclusive of houses built under the Housing (Additional Powers) Act, the tenders for which are no concern of the Government. That nearly 5,000 houses are actually completed as a result of the passing of the Additional Powers Act there is no reason to doubt, but it must be added that of that total only about one-third fulfil the public need. Of the remaining two-thirds, one-third comprises houses that are erected by the affluent (the Act enabling a man to erect a lodge for his gardener, or a week-end cottage for himself, to which the tax-payer contributes £260); the remainder are houses few of which show any regard for the rudimentary principles of planning or orientation; houses, in fact, that would have shamed the most hardened jerry-builder before the war—indeed, that would not have passed the most lenient by-laws. Meanwhile, Dr. Addison has given an assurance that a short Bill is to be introduced early next session to prolong the period of the subsidy for another year. Is it too much to hope that more stringent regulations may be enforced in the future, so as to enable local authorities to maintain a higher standard of planning and construction?

The position of the architect under housing schemes is one of particular interest at the present time. The tendency for local authorities to employ a whole-time architect at a salary, and, in the case of large corporations, to establish housing departments under a director of housing, is rapidly increasing, but it is doubtful if the ultimate result can be as satisfactory as that produced by the more usual method. In the case of a large town, which may be willing to pay for the services of a really competent man, and which has several schemes, it is almost inevitable that the treatment will lack sufficient variation. A small public body acting in that way is less likely to obtain the best architectural skill, since the salary which it can offer is not sufficiently attractive. The tendency, on the whole, is to be deplored, but it may be pointed out that it is by no means new, nor is it restricted to housing—railway companies, banks, and many other large corporate bodies have for some time maintained their own architectural staffs.

For the immediate future the provision of houses rests to a large extent with the building operatives. The Government has already gone far in its offers to the unions, yet no definite consent for the admission of ex-Service men can be obtained. While so many other trades are suffering from depression and are not working full time, the building trade alone is in a position now to absorb at least 50,000 more workers; yet, despite every inducement, it persists in its unwillingness to do so. The plea put forward by the unions is a fear of future unemployment, but it is quite evident that there are sufficient arrears of work to be undertaken to render this fear unjustifiable. Moreover, the effect of increasing activity in the building trade would be far-reaching, a stimulus would be given to the manufacturer not only of every kind of building material, but also of all the articles that go towards the equipment of even the most unpretentious home. The output of materials is improving, and the supply of cement and tiles from abroad is increasing. The shortage of money has not proved such a serious problem as was at one time anticipated. The Local Housing Bonds have already produced over £14,000,000. Mortgages have provided more than £11,500,000, and stocks issued by local authorities a further £25,000,000, making available a sum of over £50,000,000. To be added to this there is half the proceeds of the sale of Saving Certificates since October 1, which already amounts to £5,000,000. There is no doubt, therefore, that the labour shortage, coupled with restricted output, is the most serious cause of delay. If the present negotiations between the Government and the operatives prove abortive, resort should be made to some more drastic scheme. Definite areas might be selected, and in these ex-Service men might be employed under a number of instructors. Such an arrangement would afford an opportunity for employing many of the patent systems of construction that require the minimum of skilled labour; at present skilled labour is actually being wasted on work that could be performed by unskilled. What is required, however, to make such an experiment a success is a greater interest on the part of architects generally in new forms of construction. A considerable amount of research work has been done by men who understand concrete as a building material; but without the co-operation of architects, who have the necessary knowledge and training to enable them to use the material to the greatest æsthetic advantage, the best results will not be obtained.

Another aspect of the housing problem which will be receiving attention in the near future is that of town planning. The Council of every borough or urban district with a population of 20,000 and upwards on January 1, 1923, must prepare a town-planning scheme within three years of that date, and work has already been begun in this connection. The science of town-planning has much advanced since the R.I.B.A. International Conference in 1910, but it is essential that diversity of treatment be obtained. To develop everywhere on the lines of the garden suburb would lead to monotony; each district should be allowed to develop on its own distinctive lines.

NOTES.

The Registrar-General on the Housing Problem.

WE have received the following communication from the Ministry of Health: "In the Registrar-General's Annual Report for 1919 the following paragraph occurs: 'As the estimated population for 1919 is 700,000 in excess of that at the last census, it would only require (apart from replacement of defective houses) a net addition of 140,000 houses for the whole period 1911–1919 to maintain the 1911 average—that is, if the new census shows the present population estimate to be fairly correct.' It will be remembered that the original estimate of houses required, based on the returns of local authorities, was very far in excess of the figure suggested by the Registrar-General. This original estimate has already been very substantially reduced and the Annual Report quoted indicates that it is capable of even greater reduction. As against the number (140,000) suggested by the Registrar-General, over 60,000 houses had at the end of the year been completed or commenced under the schemes of local authorities and public utility societies, and over 5,000 houses have been completed under the terms of the Government grant to private builders." Bearing in mind the slow progress which has been made with the Government housing scheme, it is interesting to have this belated discovery that the original estimate of houses required is so far in excess of the figures suggested by the Registrar-General. We hope the original estimate was wrong, but has the fact that it is found to be "capable of even greater reduction" anything to do with what now appears to be the grossly exaggerated original estimate? Or is it because 60,000 houses completed out of the Registrar's figure of 140,000 is a much better percentage than 60,000 out of the Ministry's own recent estimate of 800,000 houses required?

A Suggested House Purchase Lottery.

IT is suggested that whilst the nation is engaged in a perilous gamble in its housing schemes it would be well to consider the desirability of gambling in such a way as to ensure success. We have received the bold proposal from Mr. John A. Meek that a National Lottery should be established such as would provide the full capital required for housing, and we must candidly admit we can see in it nothing different in principle from the gambling element which seems to have crept so much into our national life. Briefly, Mr. Meek suggests that sixteen million subscribers might find one pound each (possibly in four monthly amounts of 5s.). The first issue of sixteen millions would do to go on with, and as the plan proceeds money would be more readily subscribed for subsequent issue. Let us suppose the first issue has been subscribed, the houses have been erected and the lottery drawn, successful subscribers being informed of their good luck, and the rest only out of pocket £1, or, if more, having had an extra chance of winning. Even if the plan seems to be producing a nation of gamblers we may remember that we are certainly at present a nation of grumblers. Mr. Meek says:—

It may be that one or two of the successful subscribers are not "house hunting." In this event it is open to them to let at a rental almost approaching pre-war, or to sell, but should they decide to sell, I suggest that one of the stipulations on the subscribers' certificate will be that such price shall be as near as possible and not more than 10 per cent. increase on pre-war valuation. Either way the tenant or buyer will not suffer hardship and the successful subscriber is on a good thing. All will be encouraged to go in for subsequent issues until the total £480,000,000 has been allocated. High prices must be kept down in connection with building. Anything superfluous must be abandoned. It is well known the Englishman loves a gamble. Here you have one. All class distinction is forgotten. East meets West for a purpose useful to the whole country. The jealousies of the middle classes as to helping the working community and vice versa cease to exist. One idea is paramount, that of being a winner in the Housing Lottery and the knowledge that the houses are a clean asset free of any encumbrance later on to the nation with no deficiency to be made good. The palate of the public wants tickling with something wholesome. I do not profess to have altogether solved the problem, but these details provide the nucleus which, when fully developed, may bring about good results.

If some such lottery scheme were desirable and could be adopted we might scrap present housing schemes altogether, redeem bonds as quickly as possible, and so save interest, out of subscribed money in the Housing Lottery, and start properly on a sound basis.

House Building.

THE *Times* of Wednesday contains an admirable letter by Mr. P. E. Roberts, written from Worcester College, Oxford, in which some of the lessons in State interference are set out, and especially the destruction of enterprise. In this connection he says:—"No doubt it will be said that, even if free competition is the best course in time of peace, it is impossible in war, because all the conditions are abnormal. Of course, we admit that there was no possible solution free

from difficulty and loss. But, having admitted this, we reply that, even during the period 1914–1920, a limited amount of building did go on, and, if it had been to the advantage of landlords to let houses, houses, we may be sure, would, wherever possible, have been built. The position would, at least, have been eased and rendered less stringent. If no building at all was possible, then surely *cadit quaestio*; the position as regards the housing problem would have been no worse under private than under State management, and the Government, by declining to pass an Act which penalised one class in the country, would at least have avoided those anomalies and injustices which invariably attend that policy. We should not then have witnessed the spectacle of artisans with immensely inflated war wages paying landlords—often poorer men than themselves—an uneconomic rent which, in a depreciated currency, had sunk to half its former value in purchasing power."

An Appeal to Facts.

PROCEEDING, he says:—"If, finally, it be objected that the above reasoning is too abstract, the answer lies in an appeal to facts. We have tried the second course, and could matters be much worse? We all know what the Government has done by legislation, by regulations, by propaganda, by doles, by bounties, and even by attempts to bribe the building unions. Yet it is simply impossible to imagine the problem in a more dangerous and tangled condition than we see it in to-day. There was never a time when houses were more difficult to obtain, when the cost of building was more prohibitive, when municipalities were more at their wits' end to find a way out of the trouble, when discontent was wider, deeper, and more alarming. The position of the Government could not have been worse, and might well have been better, if they had courageously defended our traditional policy of free competition, not because it benefits the landlord or capitalist, but because all historical experience proves it to be the only possible system which can impart the necessary driving force to the lagging energies of human production, and distribute the advantages of that production through every grade of the industrial State."

High and Low Ceilings for Houses.

OF all the misleading statements which have appeared, ostensibly in the cause of Labour, nothing has been more unfair than Mr. Smillie's condemnation of housing schemes on account of the lowness of the ceilings. Such statements are grossly misleading and we are glad that Mr. Guy Dawber has written in protest. The fact is that many well-to-do folk would gladly exchange their high-ceilinged, comfortless rooms for the cosy low-ceilinged cottage rooms which are being provided (at a ruinous cost) for the working man of to-day. One really wonders whether this ignorance is so profound as it seems, or whether there is a worse reason.

Hyde Park Corner.
From a pastel drawing by MR. LEONARD RICHMOND.

An Alleged Conspiracy.

Now we would ask whether anyone can be considered a responsible leader who commits himself to the following statements? Mr. Smillie, the President of the Miners' Federation, is reported as follows on January 4:—"If the Government were housing one of their departments they would not risk the lives of their Civil Servants by putting them into such houses, with ceilings only 8 ft. 6 in. in height, which provided absolutely insufficient breathing space, but which was considered good enough for working-class families." After this absurd suggestion he is reported to have said:—"The children of the workers were being killed off in thousands every day for lack of breathing space. There were tens of thousands of rooms in the country that were scarcely ever occupied by the persons who owned them. There was evidently a deliberate conspiracy to prevent the building of proper houses for the workers." Is this complaint of a deliberate conspiracy nothing more than ignorance? We consider that in the interests of us all such statements should be nailed to the mast.

Painting Work and Unemployment.

EVERY spring a great deal of painting and decorating work is carried out all over the country and most firms find considerable difficulty in obtaining the necessary labour at the time it is wanted. Why should all this work be done in the spring? Much of it is indoor work which could be done in any weather, and even outdoor work is often possible in winter months. With so much unemployment about it seems surprising that this class of work is universally put off until the spring. We are pleased to see from an advertisement in this issue that a prominent firm of builders is bringing this point before the public, and it is interesting to note that they say "decorators will quote low prices now to cover their standing charges and to keep regular hands in employment."

The Late Mr. H. T. Hare.

THE premature death of Mr. H. T. Hare, Past President of the Royal Institute of British Architects and the Architectural Association, will come as a shock to his many friends and to the whole profession. Mr. Hare's prominent position in the architectural profession was achieved by his early and repeated successes in architectural competitions and to the brilliant planning of most of his buildings, and no small part of this success was due to his indomitable perseverance and thoroughness. He was essentially practical, and his art may have suffered a little in consequence, but his Stafford County Buildings and Oxford Municipal Buildings, erected some twenty years ago, may fairly well stand the test of modern criticism. It will be admitted that Mr. Hare was one of the outstanding figures in modern architectural life, though his later work has not, perhaps, been equal in quality to his first achievements, which were regarded at the time as pioneers of the highest excellence. Mr. Hare took a prominent part in professional affairs, and acted as Hon. Secretary, Vice-President, and finally as President of the R.I.B.A., but he was unfortunate in being called to the chair during the war, when such a position carried with it responsibilities and anxieties which would have proved too heavy for most men, and it was to his credit that he carried on as well as he did. His valuable war services should not be forgotten, and amongst other things he did all he could to upset the absurdity of the laws of ancient lights.

GENERAL NEWS.

Appointments.

Mr. T. J. Coombs, A.R.C.A., Head of the Leeds School of Architecture, has been appointed Head of the School of Architecture, Aberdeen, in succession to Mr. T. Harold Hughes, A.R.I.B.A.

Mr. Joseph Addison, A.R.I.B.A., has been appointed Head of the Leeds School of Architecture in succession to Mr. Coombs.

The Painter-Stainers' Company.

The freedom of the Painter-Stainers' Company has been conferred upon General Lord Horne.

Statuettes by Mr. Gilbert Bayes.

The City of Liverpool has purchased for its permanent collection the statuettes, "Sigurd" and "Artemis," illustrated in *The Builder* for December 24, 1920, and January 7, 1921.

Newcastle War Memorial.

The Newcastle War Memorial Committee has unanimously decided to give the commission for the war memorial to be erected in Eldon-square to Mr. Alfred Drury, R.A., A.R.C.A.

The Duchy of Cornwall Estate.

About two acres of land on the Duchy of Cornwall Estate in South London have been acquired on a building lease by Messrs. Boots, Ltd., who propose to erect thereon a block of commercial premises.

Baynards Park.

Baynards Park, Surrey, a Tudor mansion, which has been restored, with 1,500 acres of land, is now in the market, Messrs. Mabbett & Edge being the agents concerned. Baynards has historical associations dating back to Domesday, and it derived its name from William Baynards, the builder of Baynards' Castle, in London, who came over with William the Conqueror. According to Evelyn, the house was built by Sir George More, of Loseley, about 1577.

Proposed New Works Department.

It is announced that the Treasury has been asked to sanction the creation of a Works Department at the Office of Works. For a start it is proposed to spend £28,000 on plant and £4,000 a year on additional staff. The manager is to receive £900 a year plus bonus.

Concrete Ships.

At a meeting of the Institution of Civil Engineers, held in London on Tuesday last, Professor T. B. Abell, O.B.E., read a paper entitled "Reinforced Concrete for Ship Construction," in which were given particulars of tests on and the general experience gained with concrete and reinforced concrete used in the construction of concrete sea-going vessels designed and built under the direction, first of the Admiralty and, subsequently, of the Controller General of Merchant Shipbuilding during the years 1917 and 1918.

Eton College War Memorial.

The Council of Eton College has decided on the following schemes to constitute the College war memorial: (1) In College Chapel to restore the side-chapel; (2) to decorate Lower Chapel with panelling and tapestry; (3) to inscribe the "Record of Names" on a conspicuous bronze frieze along the upper part of the wall of the colonnade under Upper School; (4) to make a register of the names of all who served in the war in a "Golden Book," to be placed in North Chapel; (5) to erect a statue, for which a design and site are under consideration.

New Hudson River Bridge.

It is stated that a new bridge is to be constructed across the Hudson River between New York and Weehawken, a suburb of New Jersey, from the designs of Mr. Gustav Lindenthal, the Commissioner of Bridges for New York. The river at this point is three-quarters of a mile wide, and the total length of the new bridge would be 8,300 ft. The central span would be 1,000 yards in length, suspended from two steel towers 800 ft. high by steel cables 5 ft. thick. Two decks are proposed, the lower carrying eight lines of railways, and the upper carrying six lines of underground and elevated railways, two roadways and two footpaths. It is also proposed to build a railway terminus at Manhattan for all the lines now ending at New Jersey. The cost of the undertaking is estimated at £40,000,000.

Proposed New Town Hall at Islington.

At a meeting of the Islington Borough Council on Monday, the proposal to erect a new town hall in Essex-road, at a cost of £553,000, was strongly opposed on the grounds that, considering the unsettled state of prices and the distress in the borough, it was not advisable to spend such a large sum on a municipal building. In reply to Alderman Saint, who said "the proposal to pay the architect in charge of the scheme £26,000 was an unbusinesslike proceeding," the Chairman of the Finance Committee said the rate of pay to the architect was under the scale of the Royal Institute of British Architects. An amendment to defer the matter for twelve months was lost, and it was decided to apply to the London County Council for sanction to borrow £550,000 for the purpose.

Arterial Road Schemes.

Colonel C. H. Bressey, Divisional Engineer of the London Roads Branch of the Ministry of Transport, in the course of a lecture on the history of roads, at the Institute of Transport last week, said for the new arterial roads in the Metropolitan area, a width of about 100 ft. between fences was being commonly adopted, but it was not proposed at present to cover this extent of ground with actual road construction. The work now in hand comprised the fencing of the land, the shaping and grading of the full width between fences, and the construction of a carriage-way about 24 ft. wide, with footways sufficient for present requirements. In most cases the new carriage-way would be constructed towards one side of the 100 ft. Later the idea was to form a second carriage-way on the other side. Between the two carriage-ways there would be an unmetalled strip which might later on be used for a sleepered tramway-track or other form of mechanical transport.

Architecture and the Public.

With a view to stimulating public interest in architecture, the Manchester Branch of the Institute of Builders, in co-operation with Manchester University and the Manchester Society of Architects, has arranged the following public lectures by well-known architects, to be delivered at the University:—January 17, Mr. Paul Waterhouse, M.A., F.R.I.B.A., on "Is Architecture Worth While?"; January 27, Mr. W. G. Newton, M.A., A.R.I.B.A., on "What Can We Learn from Rome?"; February 17, Professor W. R. Lethaby on "Westminster Abbey and Its Buildings." In addition, the following lectures have been arranged for the members of the Institute:—February 7, Mr. D. T. John (Ministry of Labour) on "The Training of the Builder's Apprentice"; February 28, Mr. Hubert Worthington, A.R.I.B.A., on "The Buildings of Sir Edwin Lutyens, R.A."; March 14, Mr. S. Turner on "The Economics of Production." The Institute also proposes to organise visits to places of architectural and historical interest.

Municipal Art.

In a letter to the Press last week, Mr. Charles Sims, R.A., Keeper of the Royal Academy, said the municipal art collections throughout the country, with one or two exceptions, were crowded with ill-chosen pictures which would not realise one quarter of the price originally paid for them. At no period had there been more interesting developments in painting and drawing than at the present time, and expert advice had never been more needed. But expert advice was rarely asked in the buying of pictures, and more rarely taken. Successful commercial men formed themselves into committees and chose the pictures, but how should they possess the experience and judgment necessary to appreciate the highly experimental art of the past twenty years? The best pictures should be in public galleries; to keep an artist's finest work for the sight of a few dozen persons in a private house was to rob him of his reputation and the public of a pleasure that was not lessened by being shared.

Archæology in Egypt.

In an account of the research work carried out by the Gordon Memorial College, at Khartoum, contained in the report of that body for the year ended December 31, 1919, it is stated at the royal cemetery at Kurru, which lies a few miles down stream of Jebel Barkal on the right bank of the river, Dr. Reisner discovered the family burial place of the founders of the Ethiopian dynasty and of their ancestors. The tombs of the kings of Egypt and Ethiopia, Piankhi, Shabaka, Shabataka, and Tanutaman, were discovered, together with those of several of their queens, the fifth king Tirhaka having been buried at Nuri, and sixteen still earlier tombs "of the ancestors of Piankhi" were also found, but of the latter, representing five or six generations, unfortunately not a single name has survived. Another interesting discovery was a cemetery of horse-graves, in four rows, each containing four horses, which must have been sacrificed at the time of the burial of their masters. Like the pyramids at Nuri and Jebel Barkal, the graves, tumuli, mastabas, pit-tombs and pyramids at Kurru, have been grievously plundered in the remote past, and only fragments of their former treasures were recovered. The Antiquities Museum in Khartoum has received in its share of the Kurru objects two gold necklaces and some fine "Libyan" arrow-heads from the older tumuli, an ivory "Libyan" fragment from the pyramid of Shabataka, and some foundation deposits from the later pyramids on the site.

COMPETITION NEWS.

"Victory" Scholarship.

The result of the Society of Architects' "Victory" Scholarship Competition, 1920, is given on p. 71.

Glasgow.

FOR THE HIGH SCHOOL OF GLASGOW.—Designs for a war memorial. (See advertisement December 31.)

Lockerbie.

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a war memorial, to cost £2,000. Sending-in day, January 31, 1921. Further particulars from Mr. David McJerrow, Town Clerk, Lockerbie.

Royal Engineers' Memorial.

FOR THE R.E. WAR MEMORIAL SUB-COMMITTEE.—Design for a war memorial. Sending-in day, March 17, 1921. (See our issue for November 19.)

Llandudno.

The conditions of the Llandudno War Memorial Competition have now been approved by the R.I.B.A. and the Society of Architects, and there is no objection to members taking part. The sending-in day has been extended.

East Ham.

FOR THE EAST HAM HOSPITAL COMMITTEE.—Designs for a general hospital, to cost £40,000. Sending-in day, February 25, 1921. (See our issue for November 5.)

Public House Competition.

FOR THE WORSHIPFUL COMPANY OF BREWERS.—Designs for an improved public house. This competition is limited to Members and Licentiates of the Royal Institute of British Architects, and the conditions of competition may be obtained from the Secretary, R.I.B.A., 9, Conduit-street, W. 1, on deposit of £2 2s. Sending-in day, January 31, 1921.

CORRESPONDENCE.

Costing Building Works.

SIR,—In view of the reputation of Mr. T. Sum er Smit , it is with diffidence I submit my view on the question of costing. The principle of costing as outlined in Mr. Smith's letter is, I respectfully submit, of an impossible analytical nature, and, as with other complicated systems, when put into practice often leads to confusion of thought. A system of costing is of advantage, but to be serviceable it must be as simple as possible and in the nature of "finger-posts" rather than an attempt accurately to gauge and bring to particular values the many variations of work executed in the progress of an average building contract.

An attack has been made on the method of quantity surveying. The object of a bill of quantities is to particularise the items of work required to be done, and it is difficult to see how the present system of quantity surveying could be improved upon. Costing is a special department of the contractor to enable him to price units of work at a figure which will do justice to his work and return a profit for enterprise, and at the same time to guide him during the execution of his contract as to the accuracy of his pricing.

The first operation of the contractor is to price the bill of quantities, and it is here, in my opinion, the present and your correspondent's systems of pricing are wrong. The "on costs" and "plant" should not be calculated in the schedule rate, because the percentage of "on-costs" must vary *pro rata* to the value of work in hand and the particular work estimated for. Critics may raise an objection to this, on a particular point, but in the general sense it is not difficult for a contractor to gauge his "on-costs" for a period to cover the work in hand and estimated for and to add this amount to each job *pro rata* to its value. A contractor should take the value of work in hand and add the value of the job estimated for; should more than one of the estimates be accepted, this would be to the advantage of the contractor, but would adjust itself in the next estimate, for the value of work would be higher and consequently the percentage of "on-costs" lower.

With regard to "plant," a plant account should be kept for each job, and all plant, together with attendant labour on same, added, credit being given when returned. In this case the balance with a percentage should be added to the prime cost of the work. A small acquaintance with contracting will show how difficult it is to control waste and immoral use of plant. A detail account would have a good effect, and in a short while an estimator would have sufficient data fairly to gauge the value to add to total estimate for "plant." Again, profit should not be added to "on-costs," which comprise official salaries, rents, rates, taxes, office expenses, &c. These are not legitimate charges on a job in the same sense that labour and materials are. The contract should return a profit on the actual work, but, in addition, should cover a proportionate amount for "on-costs."

Pricing, therefore, should be as follows:—			
Estimated cost of labour (say)	£0	10	0
" " material (say)	0	10	0
	£1	0	0
Contractor's profit required (say) 10 per cent.	0	2	0
Schedule rate	£1	2	0

When the items in each trade are worked out and carried to summary the total would appear as follows:—

Total of summary (say) ..	£50,000	0	0
Add per cent. for "on-costs"			
Add per cent. for plant ..			
Add per cent. for insurances			
Total amount of tender ..	£		

Applying this principle to practical use, the following points stand out prominently:—

A simple costing system only is required.

The works manager has his schedule rate clearly defined. He is not responsible for management charges, and his working rate should not include anything for the lat er. It is the function of the management to fix "on-costs" and "plant," and in "on the carpet" interviews works and management stand on their respective platforms.

In estimating, labour and material should be honestly priced, and cutting should be on the rate of profit required, and in the proportion of "on-costs," which is a big determining factor, and, as pointed out, has no relation to labour and material valuation. This point is, I think, an important one, as the tendency is to cut on labour on a chance-your-arm principle.

High pricing and poor management often spell disaster. Fair pricing and good management spell success.

The "finger-post" costing during the work should be of a simple character, and is required before the job is finished, not afterwards. Any average piece of work in any trade could be detailed for cost, and reduced to its unit rate; if satisfactory, push on; if not, then tackle the "works head," and discuss the situation.

Recorded "on-costs" and "plant" are easily compared with amounts covered in estimates, and management, not works, should deal with their estimated figures.

I should be quite prepared to discuss this question with anyone interested.

LLEWELLYN JOHNS.

London.

Laying Out Land and Road-making.

SIR,—The enlightened Corporation of the City of Leicester are promoting a Bill in Parliament this session, and I think it is my duty to point out one of the sections in this lovely Bill. Section 99 reads as under:—

"It shall be lawful for the Corporation when approving at any time after the passing of this Act any plans relating to the laying out of lands for building purposes to require as a condition of such approval that before selling or granting a lease of any such lands the owner thereof shall in addition to sewering any streets or roads shown on such plans construct and make up such roads to the satisfaction of the Surveyor. If any person shall neglect to comply with any such requirement he shall be liable on summary conviction to a penalty not exceeding ten pounds and to a daily penalty not exceeding five pounds."

Owing to stupid by-laws and regulations and other stupidity it has taken me six years to get four or five roads made, and what work has been carried out has not been approved by the Corporation.

The City Clerk attended a meeting of the Rotarians some time ago and said that every facility would be offered to people to come to Leicester to develop new industries and new land developments. This section shows the type of help which might be expected if they were venturesome enough to come.

I shall be glad if you will give this section all the publicity it is possible to give it.

Leicester. W. H. SIMPSON.

University of London.

In a letter to the Press, Sir William Davison puts forward the advantages of Holland Park as the new site for the University of London. At Holland Park, he says, thirty-five acres could be obtained with possibilities of extension in the future; there are no intersecting roads, no outstanding leases, and no large population to be rendered homeless by the demolition of their places of residence; it combines spaciousness and rural beauty, is well served by buses, and is only a few minutes' walk from several railway stations and other University buildings at South Kensington.

EXHIBITION NOTES.

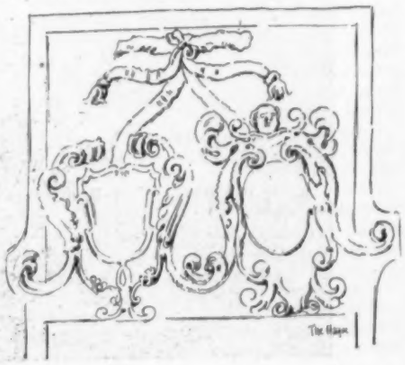
The Leicester Galleries.

IT is seldom that on going the round of picture exhibitions we are so pleasantly surprised as we are with the pictures of Irish life and character by Grace and Paul Henry. There is a force of effect in many of these things both in figure and landscape which almost touches the grotesque, but it is not an exhibition of monotony, for we find this great vigour of handling and full rich colour contrasted with the most delicate impressions of light and colour. Unless they were associated under the same name of Grace Henry it would indeed be unlikely that one would credit Nos. 42, 39 and 20 to the same artist. The strength of handling and rich colour in "The Potato Diggers" is a notable contrast to "Early Morning in Connemara," yet the artist, Paul Henry, evinces striking mastery in both. We do not remember to have seen a number of pictures by these two talented artists exhibited together in London. The strong characterization in the figure drawings by Grace Henry is no less striking than that in the picture of moor and bog, in sun and shade, with great billowy clouds, by Paul Henry. "An Irish Bog" and "Bog by the Sea" are two remarkably "real" pictures and convey fine impressions of the bog land. The interest in these fifty pictures of Irish scenery and people is sustained and varied to an unusual degree. In some we have a quite vivid dramatic force, as in the hurrying clouds over the patches of sunlight on fields and cottages, in Nos. 14 and 30, and the moonlight in No. 22, and in others we have a more refined charm such as the beautiful piece of decoration conveyed in "The Old Apple Tree" or "Spring in the Mourne Mountains" or "Early Morning in Connemara." There are some pictures here which one feels would give abiding pleasure such as the "Village by the Lake" and the "Herring Boat"; the last is perhaps as perfect a little picture of its kind as one could see. We hope these gifted Irish artists, Mr. and Mrs. Henry, will bring us further glimpses of beautiful Ireland.

In the exhibit of old pottery at these galleries, there is a whole world of suggestion for modern potters; all these pieces are beautiful in form and colour, and it is not a little disheartening to reflect that there is nothing in the essential design of these things which should be impossible to obtain in even quite simple and inexpensive pottery to-day.

The Suffolk-Street Exhibition of Graphic Art.

We must confess to a feeling of disappointment with the inaugural exhibition of "The Society of Graphic Art," at the Suffolk-street Galleries. There is a plethora of good material to draw upon for such an exhibition and there is a large amount of good drawing exhibited but as a whole one could hardly call the exhibition a distinguished one. There seems to have been a lack of selection and an apparent haphazard despatch of things that happened to be available. But there should be a great future for such an exhibition, which might even rival the photographic salons in interest! There are at least a number of very good drawings of a decorative nature, from Nos. 394 to 421 in the south-east gallery, which our readers should not overlook.



G

THE DEVASTATED WAR AREA.

PROFESSOR C. H. REILLY, F.R.I.B.A., of the School of Architecture, University of Liverpool, who recently visited the devastated regions of France and Belgium on behalf of the Canadian Government in connection with the Canadian memorials to be erected on the battlefields, has contributed an interesting account of his impressions to the *Liverpool Daily Post*.

With reference to the Ypres district, he says it is only when one arrives within five miles of Ypres that one notices that every roof has disappeared or has been replaced by a new one of bright red tiles, and that the trees begin to lose their upper parts. Ypres itself is a surprise in its utter lack of dignity. It is a collection of strange ruins and shanties. Before seeing them one somehow expected that the ruins of fine architecture, like the Cloth Hall and the Cathedral, would in themselves be fine, as they are when they are the work of time. But ruins which are the speedy work of man have no romantic quality, they are grotesque, melancholy, and insignificant. The little sheds that have been built among them, labelled with names reminiscent of other days, like the one called Hotel de Trianon, only add to the sense of depression. Occasionally a better building in beautiful Flemish brick is being attempted, and the burgomaster of the town has already built himself a new ch teau on the outskirts as an example to his townsfolk. In the villages further back which have suffered it is noticeable in Belgium, in contrast to France, that it is the churches that are being restored first, the towers in many cases being a mass of scaffolding. He did not see anything of the kind in Ypres, though a little clearing had been done to the remains of the Cloth Hall. He was told that it is proposed to rebuild a small portion of this, the whole being far too great an undertaking for the present generation. The gap in the fortifications where the Menin road crosses them was pointed out as the site of a great British memorial, to take the form of a triumphal arch, the Ypresians having refused to allow a big English memorial tower in the town itself, a refusal with which, remembering the character of their town, one has some sympathy.

Passing out of Ypres to any of the famous battle sites, like Passchendale, St. Julien, or Hill 62, one enters into an ocean of desolation. The great sweeping landscape, which was once highly cultivated with smooth fields, is still, after two years, like a stormy sea of crests and hollows, but with no regular rhythm. The hillocks straggle everywhere, with water and mud in between. Occasional patches have been levelled and tilled, but for the most part the land is still a grotesque and artificial moorland.

In the French battlefields the conditions are rather different. Here the trenches have been mostly filled in and the ground levelled. It is the towns here which seem stagnant. Except for a few new miners' houses on the outskirts of Lens, he saw practically no new building; there were endless new shacks, but much less real building than in Belgium. Towns such as Albert really resemble more than anything else a very untidy allotment ground in England, but with human beings instead of hens in the shanties. Some more optimistic person than the rest will put up a sign over a cellar to show that he is a notary or a dentist, and either practises or proposes to practise in the cellar or in an adjacent hen roost. The remainder of the sheds seem, perhaps naturally, to be estaminets. The beautiful old town of Arras is in a different state, though hardly less pitiable. Enough stands to remind one of its former graces. What to his mind is more sad than the destruction of the eighteenth-century Cathedral is the lamentable gaps and gashes which appear in its two magnificent *places*. These are surrounded by extraordinarily picturesque houses standing on columns somewhat as in the rows at Chester, but ending in fine curving gables, said, and possibly with truth, to show Spanish influence. Numbers of these have been swept away.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Notes from the Council Proceedings, January 3.

THE BRISTOL SOCIETY OF ARCHITECTS.—The Council approved of proposals laid before it by the Bristol Society of Architects for the reorganisation of the Society and the widening of the scope of its activities.

THE SCALE OF FEES FOR HOUSING.—The Council agreed to co-operate with the Council of the Surveyors' Institution in negotiating with the Ministry of Health in regard to the agreed Scale of Fees for Housing Work.

RETIRED FELLOWSHIP.—The following Fellows were transferred to the Retired Fellowship Class: Messrs. C. L hr (A. 1878, F. 1906); G. D. Oliver (A. 1877, F. 1892); Edwin Seward (A. 1876, F. 1889); and John Wynne (A. 1875, F. 1878).

REINSTATEMENT.—Mr. W. A. Gagnon was reinstated as a Licentiate.

ANNUAL DINNER, 1921.—It was decided to hold the annual dinner of the Royal Institute early in the year, and a Committee consisting of Sir Banister Fletcher, Mr. Wm. Woodward and Mr. Arthur Keen (Hon. Secretary) was appointed for the purpose of making the necessary arrangements.

PROFESSIONAL DEFENCE.—The Council has decided to re-submit to the General Body the scheme for the foundation of a Professional Defence Union which was laid before a Special General Meeting on June 15, 1914.

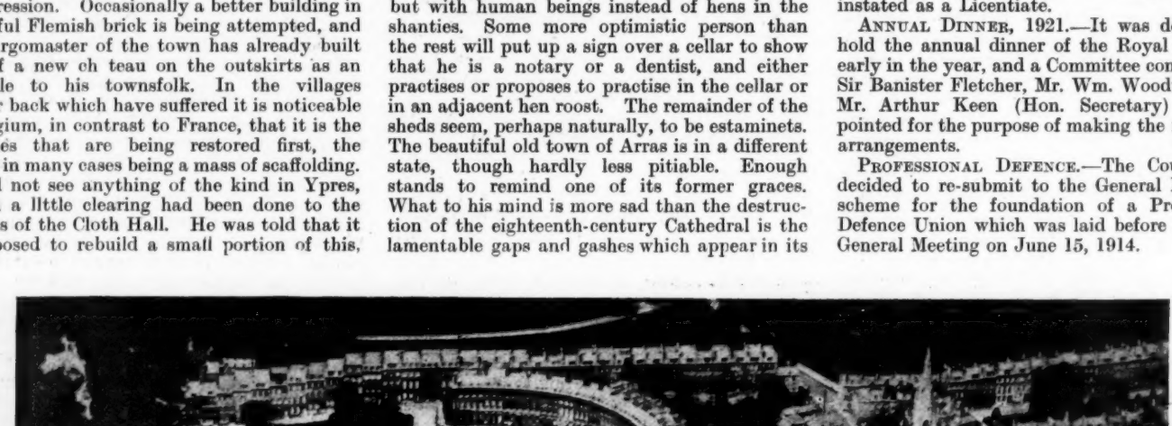


Photo: Aerofilms, Ltd.

Aerial View of Bath.

THE SURVEYORS' INSTITUTION.

LONDON BEFORE THE FIRE.

AT a meeting of the Surveyors' Institution, held at Westminster on January 10, Mr. W. W. JENKINSON read a paper entitled "The Streets of London before the Great Fire." The paper was interspersed with a large number of quotations from contemporary literature in which the streets and places mentioned were referred to.

The city of London, he said, commenced on the river-side eastward of Old London Bridge, and gradually extended westward as far as Blackfriars and the Temple, and northward as far as Leadenhall-street and Bishopsgate. The streets for the most part bear the same names as they did in the sixteenth century and earlier, as may be seen in the old maps, the exceptions being chiefly the important improvements made in the last century, the most notable being King William-street and Moorgate-street, giving a direct approach from the north to the new London Bridge. These were followed by the Holborn Viaduct, and later on by Queen Victoria-street. The new thoroughfares connecting the Strand with the west central district are still more recent. Following the usual course in the birth and growth of new cities, the first houses, long before the Norman Conquest, were probably built by the river-side in Thames-street, but it was not till Norman times that these were of any importance and that the great nobles began to take up their residence there and build houses of a sumptuous character. Baynarde is reported to have come over with the Conqueror, and died in the reign of William Rufus. The name still survives in "Baynard Castle Ward." The street was mean and narrow, as it still is, but the approach to the great houses was chiefly by water, and the chief entrance and most imposing front was to the river. Play-writers gave the street a bad name centuries after Baynarde the Norman lived there. In Suffolk-lane, Candlewick-street, close to Thames-street, was a somewhat noticeable house named "Rose Manor," the residence of William de la Pole. One of the customs of the manor seems to have given rise to the title, viz., the granting of leases at a nominal rent, consisting of the payment of a rose once a year. There were other instances of the same practice, *e.g.*, a small piece of land, part of the Bishop's Inn without Temple Bar, was leased for building houses for a term of thirty years, the rent for the first year being a rose at Midsummer, and for the remainder of the term 6s. 8d. per annum. This was in 1403. "The Three Cranes," both as a tavern and a wharf and public landing place, is frequently mentioned. Even royalty did not disdain to cross dirty Thames-street to get there. The Vintry in Thames-street was the district occupied by the wine trade and the hall of the Vintners' Company was close by, and, as rebuilt after the Fire, is still there.

Near where Cannon-street Station now overrides Thames-street stood the Stil-yard, or Steel Yard, a place which grew to be one of some importance. Here the German merchants of the Hanse were in great force, certainly as early as the fourteenth century, and carried on an extensive trade in wines and the storage of corn. They built a large house of stone, which came to be called *Gildehalla* (or *Guilda Aula*) *Teutonicorum*, or Guildhall of the Germans. The society existed for some centuries, but the jealousy of London merchants brought about its termination.

Parallel with Thames-street, Tower-street, Eastcheap and Candlewick-street ran in continuation westward, the last of these (the name corrupted to Cannon-street) being in the nineteenth century continued to St. Paul's-churchyard. The other main streets from east to west, and converging at St. Paul's, were Fenchurch-street and Lombard-street, Cornhill (the name including Leadenhall-street), and the West Chepe. The intersecting small streets trending from north to south are numerous, and all of them have some history of their own. Clement's-lane, Nicholas-lane, Abchurch-lane, Swithin-lane and Sherborne-lane connected Lombard-street with Candlewick-street. The first four take their names from the churches there, "Abchurch" possibly meaning "Up-Church," the building being on rising ground.

The street surrounding the real Churchyard of St. Paul's Cathedral is now, as it was three centuries ago, a place of shops; but the shops in the sixteenth and seventeenth centuries were mostly those of booksellers. It seems that some of the shops were built in actual contiguity to the cathedral, there being no Building Act or district surveyor, *e.g.*, Richard Jones had one "joyning to the south-west dore."

The Fleet continued from Blackfriars to Holborne Bridge, and the "Old Bourne" supplied a name to the street the steep ascent of which gave it a bad reputation. Holborn as a place for private residence was much sought after at the end of the reign of Queen Elizabeth, but for some time there was nothing but open fields on the north side, saving the magnificent palace of the Bishop of Ely, to which appertained some 40 acres of land. The banqueting hall was one of the largest in London, and was the scene of many notable festivities. The beautiful fourteenth-century church still remaining in Ely-place was the Bishop's chapel. The beautiful timbered front of Staple's Inn is a fair specimen of what many London streets were like. Many years before the old Temple stood on the site or near; the Temple which we know in Fleet-street was later, and dates from the twelfth century. Parts of the old Temple afterwards formed the residence of the Bishop of Lincoln. At a later date, near by stood the residence of the Earl of Southampton, and his son, Henry Wriothesley, Shakespeare's great friend and patron, also lived there.

Water-pipes were at the time often made of hollowed trunks of trees cut in lengths of about 10 feet, the smaller end of one section fitting into the larger end of the adjoining one. Such pipes have been often dug up in recent times, and were apparently in good preservation. About six months ago some of them might have been seen in Lincoln's Inn Fields in the road by Lincoln's Inn Garden. They had been dug out only some four feet below the present road level.

The name of Chancery-lane indicates the law and lawyers, but the street was originally known as New-street, and near at hand may still be seen New-street-square as a reminder of this. Lincoln's Inn, with its fine old Tudor gateway, is there, and Serjeant's Inn has only recently been removed. The modern buildings of the Public Record Office, now so noticeable, occupy the site of the older depository of our national archives, and the old building had a still earlier use as the Home for Converted Jews, built by Henry III. The Bishop of Chichester lived in Chancery-lane before the time of Lincoln's Inn. Except Henry VIII's gateway not much of old work of Lincoln's Inn can now be seen. The houses in Quality-court date from Queen Anne's time. The name of the court was originally New-court, but was changed to indicate the higher grade in the social scale of the residents. At the date alluded to, Bedford-row was a fashionable locality, and Gray's Inn-walk the resort of "The Quality."

The street known as "Long Acre" was formerly "Elm Close," parallel with the Strand, and situate outside the boundary of the Convent garden. The name creates a little difficulty, an acre being a measure of superficies, but a plausible suggestion has been made that in the division of common lands in old times each villager had his acre strip in rotation with others. The partition was still shown in maps of the late eighteenth century. The ownership of a long narrow strip (even if the measure were not actually so much as an acre) might have given rise to the term "Long Acre." It was in the reign of Charles I that the fourth Earl of Bedford laid out the Covent Garden with a view to building.

Charing was a small village or suburb, and is not often mentioned without allusion to the Cross, one of the most beautiful of the Eleanor Crosses. As early as 1601 the Cross was dilapidated, as we read in a play:—"They say Charing Cross has fallen down since I went to Rochester, but that's no such wonder; 'twas old and stood awry as most part of the world can tell." The cross was of white marble, and at that time had already lost its head. In 1647 it was pulled down. The equestrian statue of King Charles I stood in his lifetime on the site of the Cross, and still stands there, but after the King's execution it was sold as old metal to a dealer, with a stipulation that it should be melted down. But the purchaser secretly buried the statue and deluded the public by the sale of articles supposed to be made of the metal, which were bought by Royalists as relics of the martyred king. Some years after the Restoration it was re-erected.

GLASGOW INSTITUTE OF ARCHITECTS.

The College System in Universities.

AT the last meeting of the Glasgow Institute of Architects, Professor R. S. Rait delivered a lecture on "The Development of the College System in English Universities." The chair was occupied by Mr. W. D. Whittle.

At the outset of his lecture, Professor Rait referred to the problem presented to architects by the development of the college at the English universities, and said that, at the period of the origin of universities, the term *Studium Generale* expressed more nearly the meaning of our modern word "university," and that the early *universitas* were guilds with a *studium*. The two types of guilds which developed in the twelfth and thirteenth centuries were the student universities and master universities. The English universities belonged to the latter class, in which the masters, or doctors, and not, as in Italy, the students, were the ruling body. But the students at Oxford were, in early times, under as strict discipline, and they lived together in democratic halls, electing their own principal and forming what was in the nature of a club. The development of the hall into the college came about through the intervention of pious donors who conferred endowments upon halls and, along with their benefactions, gave conditions and regulations which soon passed into very strict codes and statutes. The earliest college founders did not, as a rule, erect buildings for their students, although the earliest of all—Walter De Merton—did provide buildings as well as endowments and statutes. The full development of the college as a building was the work of William of Wykeham, who founded New College, Oxford, in 1379.

By means of lantern slides, the lecturer illustrated the manner in which the fourteenth-century architects solved the problem of providing for some seventy scholars a home which would supply all the wants of mediæval life. New College became the type for college buildings, and was followed by later founders. Much that Wykeham did had already been done elsewhere, *e.g.*, the quadrangular shape, suggested, perhaps, by the accidents of space at Merton, had already been deliberately adopted at Corpus Christi, Cambridge; but Wykeham gave cohesion to previous experiments and himself introduced the new idea of a chapel consisting of a continuous choir and nave, the nave possessing two aisles of its own height and length. At the end of the sixteenth century a new problem was presented to college architects by a great influx of students after the adoption of a rule that every undergraduate must belong to a college or hall. The lecturer showed how this problem was solved by introducing garrets into existing two-story college buildings, by adding a third story, or by pulling down the old structures and erecting the beautiful seventeenth-century buildings characteristic of Oxford. The lecture was illustrated by many lantern slides of Oxford Colleges and University buildings.

SOME ASPECTS OF DOMESTIC HEATING.

By MARGARET WHITE FISHENDEN, D.Sc.

IN view of the urgent demand of the working classes of this country for a more adequate provision of houses, and the consequent probable erection in the near future of large numbers of such dwellings, the question of the most suitable methods to be adopted for their warming becomes of particular importance, and has recently attracted a considerable amount of notice. It is, therefore, of interest to draw attention to certain problems of grate and flue construction bearing upon the matter of fuel economy.

The results of recent work by various observers have shown that the open coal fire emits some 20 to 25 per cent. of its total energy of combustion as radiation into the room in which it is situated; that modern designs of gas fires emit some 40 to 50 per cent., and the electric radiator emits an amount which varies over wide limits with the type of radiator employed, but which has been stated on reliable authority to rise in certain cases as high as 60 per cent. The air heating produced by coal or gas fires is as a rule relatively unimportant, and the average overall efficiencies may be reasonably computed as about 30 and 60 per cent. respectively. The overall efficiency of an electric radiator, if not placed under a flue, may be assumed to approach 100 per cent. of the energy expended.

With coal at 40s. per ton, gas at 4s. per 1,000 cubic ft., and electricity at 1d. per unit, it can at once be calculated that the relative costs per B.Th.U. of these three agents are in the ratio of 1 : 6 : 19; but, taking these prices in conjunction with the efficiency figures quoted above, the ratio of the actual heating obtained for equal initial costs works out at 1 : 3 : 6. That is to say, for continuous heating, and taking into account no other factors, the cost of coal is only about one-third that of gas, or one-sixth that of electricity. But both gas fires and electric radiators possess certain obvious advantages over solid fuels as a means of heating: they can be lighted at a minute's notice, turned on or off at will, and rapidly reach their maximum heating effect. Coal fires, on the other hand, are troublesome to light, take an appreciable time to reach a high radiating value, involve additional work in the cleaning out of the grates and flues, and frequently involve waste in the discarding of cinders. Further, both gas fires and electric radiators are smokeless. The psychological effects of the smoke nuisance cannot easily be exaggerated, but there is in addition a serious material loss attributable directly to this cause. In a pamphlet on "The Black Smoke Tax," recently issued by the Air Pollution Advisory Board of the Corporation of Manchester, it is stated that that city's annual expenditure in largely ineffectual efforts to obliterate the ravages due to smoke amounts to at least three-quarters of a million pounds per year—an estimate, it may be remarked, which appears, on the evidence presented, considerably under-rated.

Notwithstanding these important features, however, neither gas nor electricity is likely, owing to its greater cost, immediately to displace the open coal fire for continuous heating unless legislation is brought to bear upon the matter. For rooms which are used intermittently gas fires may generally, and even electric fires sometimes, be more suitable than coal; but for continuous heating, both—and especially electricity—are out of the question where economy is a consideration of any moment.

We have in coke a solid fuel which burns practically without smoke; but gas coke, unfortunately, as generally supplied, commonly contains a large percentage of moisture, which not only raises the effective price of the coke but also increases the difficulty of igniting, and decreases the heating efficiency by an amount which is at least the full equivalent of the heat required to vapourise all the water present in the coke. When dry, however, gas coke may in many cases be used with advantage for domestic purposes; the radiation emitted is for a good quality coke greater, weight for weight, than that from a high-class house coal. There still remains, also, the possibility of the production of low-temperature cokes, which are easily ignited, and produce a bright and extremely pleasant fire which, in addition to being smokeless, is the most efficient solid fuel radiator which the writer has yet examined. The production of such cokes upon a large scale can probably scarcely yet be regarded as a commercial proposition, but the problem is receiving considerable attention, and upon its development the hopes of many smoke reformers are based.

In view of these considerations, therefore, and of the likelihood that the open coal or coke fire will continue to retain an important position in the heating of our houses, the importance of securing the greatest possible economy in the combustion of such fuels becomes immediately apparent.

There are in house heating other questions than those of mere quantity of direct radiation and air heating to be taken into account. It has been found that the aggregate amount of radiation thrown into a room from the combustion of a given weight of fuel burning in open grates varies surprisingly little with the type of grate employed. The radiant efficiency, or the percentage of the total energy of combustion of the fuel burned which enters the room as radiation from fires of high-class house coals, has been found to vary in different grates from 19½ to 24 per cent.; no advantage was shown in favour of the modern grate, the figures referring to an old-fashioned register grate with bars in front being actually slightly higher than those for a modern bar-less grate. But the design of the grate has a considerable bearing upon the distribution in space of the radiation emitted. For modern grates, in which the surface of the burning fuel is comparatively flat, the intensity of radiation shows a marked maximum at high angles, generally about 60 deg. "north." A small old-fashioned register grate, on the other hand, showed little variation in intensity between angles of emission 80 deg. "north" and 20 deg. "south." Judged, therefore, by its value as a direct radiator, the vertical-surfaced fire has an advantage over the relatively flat-surfaced fire, which increases as the distance of the occupants of the room from the fire increases. Any recessing of a fire, or blocking of radiation by low, broad mantelpieces, etc., cuts off a proportion of the radiation.

The whole problem of the adequate warming of rooms is seriously complicated by the fact that the human body must be kept at a temperature higher than that of its surroundings, walls and room air in this country seldom being maintained above 65 deg. Fahr. The occupants of a room heated by an open fire, therefore, while receiving heat by the absorption of radiation which strikes them directly from the fire, are at the same time losing heat by radiation to the relatively cold walls of the room and by convection to the cold draught which sweeps over them on its way to the fire. The effects of draught are emphasised in the case of open coal or coke fires, which commonly draw a large volume of air through the room, often from chance inlets around a door on the wall opposite the fire. Gas fires also move a considerable volume of ventilating air, while electric radiators cause a relatively insignificant circulation, probably not consistent with the most hygienic conditions. In the case of coal fires, the effects of draught may be so exaggerated that at considerable distances away from the fire, and in the full path of the air currents, the effect of the fire upon bodies at blood heat may be a negative one; that is to say, in such positions the faster the fire burns the more rapidly does the temperature of bodies at blood heat fall, the effects of increased radiation being more than counterbalanced by the accompanying increase in draught.

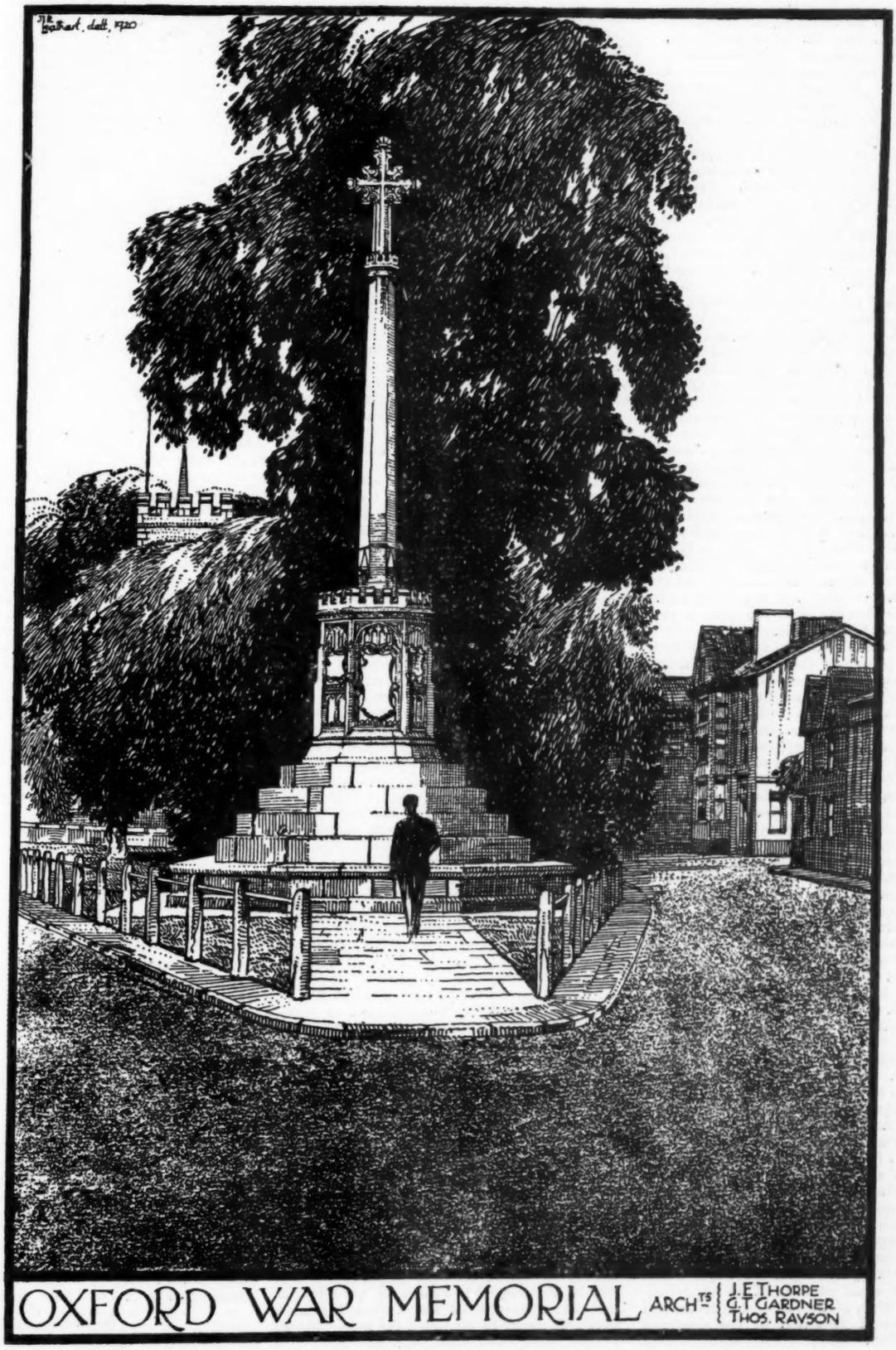
The importance of sustaining sufficient ventilation must not be overlooked, but it is, nevertheless, doubtful whether the localised draughts so often found between door and fireplace with open grates are desirable. In any case, draught regulation should always be provided, both in the flue above the fire by means of a damper to regulate the effective flue area, and also by means of a fender or ash-guard to adjust the quantity of air entering the fire from below. Coal fires normally burn with so great an excess of air, much of which finds its way under the canopy directly into the flue without ever having passed over the coal, that a considerable reduction in the total draught passing up the flue may be effected by means of a diminution in the area of the flue, without greatly altering the rate of burning of the fuel. Draught restriction by means of blocking the access of air to the fire from below, however, at once cuts down the rate of combustion. If both are available, it is possible to regulate separately the draught and rate of burning.

The writer has often found it both economical and comfortable, when the combustion in a solid-fuel fire is well established, to reduce both draught and rate of burning so far as is possible without smoke escaping into the room, opening a window for a few minutes when necessary for additional ventilation. Under these conditions, although the rate of burning of the fire is cut down and the radiation emitted reduced in like proportion, an impression of greater warmth is produced. Moreover, owing to the fact that under such conditions the volume of air passing through the room is in general reduced in much greater proportion than the rate of burning of the fuel, the actual temperatures in the flue are increased, and conduction through the flue walls consequently increased. This may become a matter of considerable importance when the flue is, as all flues should be, built on inner walls. There is little doubt that the popularity of the modern bar-less grate is attributable rather to lessened draught and consequent slower rate of burning (the air supply through the fuel, in particular, being minimised), than to any actual increase in the efficiency of radiation. The reduction of the cooling effect of draughts gives an impression which is interpreted as a feeling of greater warmth. Such grates may, therefore, in use, represent a considerable economy. In this respect gas coke, which burns freely only under the influence of high draught, suffers some disadvantage, but conditions may here be improved by allowing free access to the fuel from below the fire, while reducing the flue area. Low-temperature cokes will burn vigorously under similar conditions to coal. Where it is felt desirable to maintain high air flow through a room, much protection from draught is afforded by a judicious use of screens.

In the aggregate, much economy may be secured by observance of the following points:—(1) Flues to be built on inner walls; (2) inner walls of flues to be constructed of as good a conducting material as practicable; (3) outer walls to be made as effectively insulating as possible; (4) all flues to be provided with means of draught regulation, including means of adjusting the amounts of air which enter the fire from below; (5) screens to be made use of in cases of excessive draught; (6) fires to be recessed as little as possible.

Colchester War Memorial.

The memorial adopted by the Colchester War Memorial Committee is to take the form of a massive stone pedestal rising from a stepped plinth and surmounted by a bronze figure of Victory, with supporting figures of St. George and Peace on two sides of the pedestal. Mr. H. C. Fehr, R.B.A., is the sculptor. The monument, the total height of which is about 30 ft., is to stand in a prominent position inside a crescent road near Colchester Castle. Some buildings near the site are being cleared, and when the work is completed a new entrance near the memorial will give access to the Castle and Park off High-street.



Oxford War Memorial.

MR. J. E. THORPE, Lic.R.I.B.A., MR. G. T. GARDNER, Lic.R.I.B.A., and MR. T. RAYSON, A.R.I.B.A., Associated Architects.

[This memorial is shortly to be erected at the north end of St. Giles, Oxford.]

THE TOWN-PLANNING INSTITUTE.

DISTRIBUTION.

MR. H. E. STILGOE (President) occupied the chair on January 7 at a meeting of the Town-Planning Institute, when Mr. RAYMOND UNWIN, F.R.I.B.A., read a paper on "Distribution."

MR. UNWIN said he had taken the word "distribution" as the title of the paper in order that he might cover both the distribution of the parts of the city and the distribution regionally and daily of its population; for it seemed to him that in the subject of distribution the main problems which faced the town-planner at the present time were to be found. Many of the detailed difficulties of town-planning had been satisfactorily faced and solved. The importance of arterial highways, the distinction between main and minor roads, and the necessity for comprehensive site-planning, were now generally recognised. The right of public authorities to limit the density of dwellings, to guard their amenities, and to control new development, had all been admitted. Many admirable methods for dealing with these matters had been devised, and there now remained to extend to the whole country the type of development and town-planning control which had been amply proved to be desirable in the pioneer areas. In regard to the broader aspects of distribution, however, the problems remained not only unsolved but largely unrecognised. It was true that in several town-planning schemes there had been areas reserved for factory, for business, and for residential purposes, and in so far as those limited areas were concerned some advance in the direction of solving the problems of distribution might be said to have been made—at least the public interest in dealing with the problem had been recognised. But the subject was the root problem of the big town looked at as a whole.

In spite of all the drawbacks the big towns continued to grow, but they were little more than amorphous masses of population. He suggested that the improvement of conditions in the modern town would depend on the attainment of two main ends—the proper distribution of the parts of the city, and the adequate localisation of the life of its citizens. Large cities would best be served by a number of industrial areas, each of adequate size to justify the provision of the necessary transport facilities and to allow for reasonable expansion of the factories, and each in close touch with a sufficiently large residential area for all the different classes of workers which might be required.

The question arose as to how far it was possible for a growing city, through the medium of town-planning, to secure an end in itself so desirable as the greater localisation of life. He believed that proper distribution of the parts of the city, and the clear definition of the various areas, would do much to secure this. Each area in which it was intended to develop a localised life must, of course, be provided with every facility for all the different branches of life it was practicable to localise. There should be local work and occupation for as many as possible of the people living there; there should be local markets and shopping centres to provide for their daily needs; there should be educational and recreational facilities. It would not be practicable to have a university in every such locality, but at least there should be high schools. There should be a hall for music, a theatre, and ample provision for playing fields.

It would be found that the proposed distribution would largely depend on the proper apportionment of open space around each area, and that this open space would serve two main purposes. It would provide all the opportunities for recreation, gardening, and so forth, and give a degree of definition to the area and separation from other areas which would emphasise the locality as a defined unit. There was one alternative to the redistribution of the population of great cities horizontally which must not be overlooked, for it had been recently advocated with some authority that a better solution would be to provide for expansion vertically. There was a certain plausibility in the suggestion that the piling of houses one on top of the other, and thus increasing the number of people who could live on the central areas of the town, would reduce transport difficulties and would generally be an advantage to a people all anxious to share the supposed benefits of living near the centre. It was a proposition having much the same preliminary appearance of obvious truth as the now exploded theory that the crowding of the largest number of houses to the acre was necessarily the most economical and paying way of developing land. He very much questioned whether expansion upwards would be a satisfactory solution of the big town problem; but if the citizens of a town were to be regarded as human beings, and if it were considered that the main purpose of the town was to provide the healthiest and fullest life for its citizens, and particularly for the children, it was difficult to find even a case for the proposal for expansion upwards—at any rate, as applied to residential areas.

There was only one remedy consistent with the maintenance of the great city as we knew it, and that was to convert it into a group of smaller ones, each of which became a definitely localised community having its defined areas, with accessible spaces of open country defining that area, and having its life mainly localised within that area, but enjoying in addition some increased advantages due to the fact that the community unit had itself become a member of a large unit, the great city which collectively could give to it certain opportunities both commercial, industrial, and cultural, which were beyond the reach of the individual small town. He did not suggest that large towns could immediately be carved up into satellite towns, razing the buildings on large areas to create adequate belts of open space around each, and rearranging those that were left to produce reasonably-planned, self-contained urban centres. If they were satisfied that along the lines suggested the right solution of the city problem was to be found, they could work towards that end. The future development of existing towns could be more and more guided in that direction; extension plans should more and more provide for the development of self-contained and clearly-defined suburbs and not mere extensions of the existing town; where practicable, satellite towns should be encouraged as the system of development to be more and more depended upon; and, moreover, the zoning of existing urban areas should be seriously taken in hand with a view to their gradual disentanglement and the ultimate creation of definite districts or wards having considerable localised life, which would be encouraged by the provision of suitable central civic areas and recreational facilities, and by the development as far as might still be practicable of defining lines of park or parkway, fixing, both visually and to some extent practically, the limits of the area occupied by each ward-community. If this policy was to be developed, some extension of town-planning powers would be needed to make them applicable to the already urbanised areas; and the problem which needed to be worked out was the application of the zoning principle, which consisted in defining in built-up areas the lines of future rebuilding, the regulations as to user with which future buildings must comply, and the height and character to which they must be limited. To secure the gradual disentanglement of the town in an effective manner and within a reasonable space of time, and to do this by means of zoning regulations without unduly injuring the owners of property or hampering the present use of their buildings, would be found to present a far more difficult problem than that which had been dealt with in the present Town-Planning Act, where uses and character of future buildings and development only had to be defined.

In addition to the question of zoning, the concurrent problem of the distribution of land values must be squarely faced and solved. As the town-planner distributed the functions of the city and limited the user of the different areas, so he inevitably distributed land values, creating and destroying values which had been based on a prospective continuance of haphazard development. As a result of his work some owners, whose land chance growth would have left lying unused, would benefit; and others, whose land might have been built upon if it had not been set aside for open space, or limited in its use, would be deprived of anticipated increase of value. In fairness alike to the owners of land and to the public that difficulty must be dealt with. Experience showed that the wise use of town-planning might greatly increase the financial advantage and the attractiveness of life in and about the city, and that the total which the community could afford to pay for the privileges of the town would be greater because the advantages of life would thus be increased. It seemed clear, therefore, that the question of land values presented no real economic difficulty in the way of the bold adoption of all desirable town-planning improvements, but that the difficulty arose purely as a problem of distribution; and he suggested that before town-planning could be thoroughly carried out, especially in the urbanised areas where values were high, a method must be found whereby the distribution of values could be equitably handled, the increase on certain areas being utilised to compensate those individual owners whose land might suffer relative decrease of value owing to the town-planning activities. Some American cities had already found a working solution of the problem which was worth a more serious study than had yet been given to it.

In planning to meet these larger and smaller distribution problems the importance should be emphasised of leaving space for the expansion of each of the parts. Careful planning could secure this with very little inconvenience to any of the parts meantime; for example, there was no necessity to detach the business area from the residential area in order to leave room for the expansion of the latter, but it was necessary that land within the areas defined by the main communicating streets should be reserved for future expansion of commercial or business areas, and that residential areas should not be allowed to crowd up the whole of the space round the small business area with which a new town or suburb might commence its existence.

The problem which particularly called for study was the disentanglement of the large towns which had been allowed to grow without guidance, and the proper distribution into suitable parts of those functions, such as commerce and the big industries, which might be definitely centralised either in one or in several centres; and, thereafter, the definite localisation of the remainder of the life of the city, grouping it around suitable subsidiary centres and within areas defined and limited by open space. The best solution was the creation of detached, self-contained suburbs or satellite towns, in each of which the maximum provision for life of all kinds should be made for ministering to the wants and enjoyment of the people, and from each of which to the central and commercial and industrial areas special means of rapid transit would be provided by rail or road as might be found most convenient and most appropriate to the distance to be travelled and the volume of the traffic to be dealt with. Within each one of these areas the question of distribution must be carefully considered, so that the minor industries producing mainly for the benefit of the localised population might be grouped into smaller centres where they would not interfere with the amenities of the dwellings or obstruct the future growth of the minor business areas.

Discussion.

Considerable discussion followed, in which MR. BARCLAY NIVEN, MR. E. WILLIS, MR. G. L. PEPLER, MR. MAWSON, the PRESIDENT, and others took part. General agreement was expressed with the views of the speaker, although MR. MAWSON pointed out that in some cases, as in London squares, the height of the buildings facing the open space had relation thereto.

Leading Contents.

	PAGE
HOUSING PROGRESS	57
NOTES	58
GENERAL NEWS	60
COMPETITION NEWS	60
CORRESPONDENCE	61
EXHIBITION NOTES	61
THE DEVASTATED WAR AREA	62
THE ROYAL INSTITUTE OF BRITISH ARCHITECTS	62
THE SURVEYORS' INSTITUTION	63
GLASGOW INSTITUTE OF ARCHITECTS	63
SOME ASPECTS OF DOMESTIC HEATING	64
TOWN-PLANNING INSTITUTE	66
OLD VILLAGE LIFE	67
OBITUARY	67
THE ARCHITECTURE OF CROYDON	70
THE SOCIETY OF ARCHITECTS	71
THE CONCRETE INSTITUTE	72
THE HOUSING PROBLEM	72
BEVERLEY HOUSING SCHEME	73
HOUSING AND TOWN-PLANNING NOTES	74
THE BUILDING TRADE	75
CONDITIONS OF BUILDING CONTRACT—II.	75
REPORT OF THE SELECT COMMITTEE ON BUSINESS PREMISES	76
NEW INVENTIONS: COMPOSITE CONCRETE CONSTRUCTION	78
COMPETITIONS, CONTRACTS, &C.	79
PROPOSED NEW BUILDING AND OTHER WORK	81
TENDERS	85

ILLUSTRATIONS.

Central Library Building, Detroit.

This week we give some further illustrations of the Detroit Central Library, for which Mr. Cass Gilbert, of New York, is the architect. In our last issue we gave the front elevation and a general view and quarter plan of the ceiling of the Delivery Hall. The building, which was begun in 1915 and is now nearing completion, is of white marble and has a frontage of 197 ft. 7 in. and a transverse dimension of 219 ft. The entrance hall and main stairway are finished in Tennessee marble, and the main delivery room with Indiana limestone walls and Tennessee marble floors. The Library has a capacity of 800,000 volumes, and the total cost is 2,288,000 dollars.

MEETINGS.

FRIDAY, *January* 14.

Glasgow Architectural Craftsmen's Society.—Mr. A. B. Mitchell on "Training of Craftsmen: (1) The Wood-worker." At Royal Technical College, Glasgow. 7.45 p.m.

London Society.—Mr. C. Clark on "Dickens' London." At 18, John-street, W.C. 2. 4.30 p.m.

SATURDAY, *January* 15.

Incorporated Clerks of Works' Association.—Annual dinner. At Holborn Restaurant, W.C.2. 6 p.m.

MONDAY, *January* 17.

Royal Institute of British Architects.—Mr. H. C. Bradshaw on "The Restoration of Praeneste." At 9, Conduit-street, W. 1. 8 p.m.

Manchester Institute of Builders.—Mr. Paul Waterhouse, F.S.A., F.R.I.B.A., on "Is Architecture Worth While?" At Manchester University.

TUESDAY, *January* 18.

Institute of British Decorators.—Mr. H. J. Dowling on "Schools of Art and their Value to the Trade." At Painters' Hall, E.C. 4. 7.30 p.m.

WEDNESDAY, *January* 19.

British Museum Lectures on Ancient Architecture.—Sir Banister Fletcher, F.R.I.B.A., on "Roman Architecture." At British Museum, W.C. 1. 4.30 p.m.

Northern Architectural Association.—Mr. G. A. T. Middleton, A.R.I.B.A., on "Westminster Abbey." At 6, Higham-place, Newcastle-on-Tyne. 7 p.m.

OLD VILLAGE LIFE.*

THIS is an admirable book on the whole, by an author well known for his writings on history and antiquities. He traces the development of rural England from the earliest times to the present day. Though alluring to dwell in the early light of the English dawn, it is more possible to visualise the life of less remote periods. The story of the Whispering Knights, and whether the stones of Carnac rushed down into the sea, with other legends of old time, will stir the imagination, but we cannot trace much of actual life in such records, any more than we can now picture the age of that Megalithic monument called Stonehenge. But when we come to Saxon times the characteristics of village life begin to appear. The village came into existence during the Celtic period, when the Neolithic folk had passed away or been absorbed. The author, in speaking later of the nature of English Gothic, reminds us that it owed but little to foreign influence and was the work of the people, a true English native art, and he quotes a familiar passage of William Morris emphasising this point of view. But it was not only the art of peasants, and such a view must not be pressed too far. At a time when the peasant enjoyed a liberty in which his own spirit could find such free scope, may we not rightly conclude that a like temper and freedom penetrated the whole nation; an exalted general level of corporate life in which all shared?

Such fragments of Gothic sculpture as may still be seen in many of our ancient churches—in Cobham Church, Kent, are preserved some very fine examples—show that it was something more than the art of peasants, and that when, as at times, the sculptured carvings reach a distinction of form and beauty comparable to the Greeks, others as well as peasants contributed, and lent their more skilled endowment to fortify the art. This consideration is important because we are all members of one body, and it was the strength of the whole nation, of which the peasants formed a great part, no doubt, which gave us the splendours of English Gothic. We know that though the general fabric of a building was executed locally, masons of special reputation, who came from a distance, were given important work to do.

The great lesson we may learn from English Gothic is the evidence of life knit closely together by common ideals. There was then a close community of objects and ideals between the Church and the people. Our present life, with its dismal theories of the struggle for existence, the survival of the fittest, instead of life shared and mutually succouring, has steadily imprisoned the mind within itself, replacing for the wealth of corporate union, realised through the binding grace of religion, the poverty of the single mind.

We are glad to read the author's endorsement that it is possible to adapt many of the old cottages to modern needs. Though a safe guide as antiquary, he is less so as historian. His references to the Puritan movement, in which he perceives nothing but the faults which discoloured it, leave out of account the great virtues which were its dominating characteristics. Our author is sometimes less than impartial and allows Anglican prepossessions to colour his statements. It rather jars on us in reading his exordium on the squire to hear as part of the countless blessings of his rule that "if it had not been for the charity of the squire and the rector, it is difficult to see how the labourer could have lived." It does not occur to him that this way of living may be disagreeable to the labourer, or that he prefers the independence of a living wage, and that charities and doles are not the last word in human relationships. We confess to wondering how far these doles even reached the labourer who ventured to express favourable opinions on the Reform Bill! These are, however, but a few blemishes in a very readable volume, touched in with a good deal of vivid local colour and antiquarian knowledge, which may be warmly recommended.

The problems of reconstruction that confront us now will be much aided by the intelligent understanding of past conditions of life, and are more likely of solution if we keep in touch with history and experience than if we neglect it. We cannot start again, and the new order will grow inevitably out of the old. We must preserve the past, so far as that is possible, and build on it; or allow our consciousness of the need, and not change, to lead us to any want of reverence for what has been. No one at all familiar with the towns and villages of the country side, such, for example, as are to be seen in the shires of Oxford, Gloucester, or Berks, can doubt of the precious heritage eqeathed to us, or do less than realise the nobility of the life which could create such significant and beautiful surroundings. We must mix with our reforms something of this ancient temper if we are to create in our surroundings a like beauty. And the danger lies in any too great dependence on organisation, economic change, or, in fact, any reform schemes whatsoever unless this lies at the foundation of our work. Reconstruction must be accompanied by a revaluation of the objects of life. Only when the country is dear to the hearts of each of us and corporate enthusiasm replaces personal and sectional aims shall we reach our desires, because we shall have established our reforms on a new happiness, and through that happiness we shall reach beauty.

* *Old Village Life.* By P. H. Ditchfield. London: Methuen & Co. Price 7s. 6d. net.

OBITUARY.

Mr. Henry T. Hare.

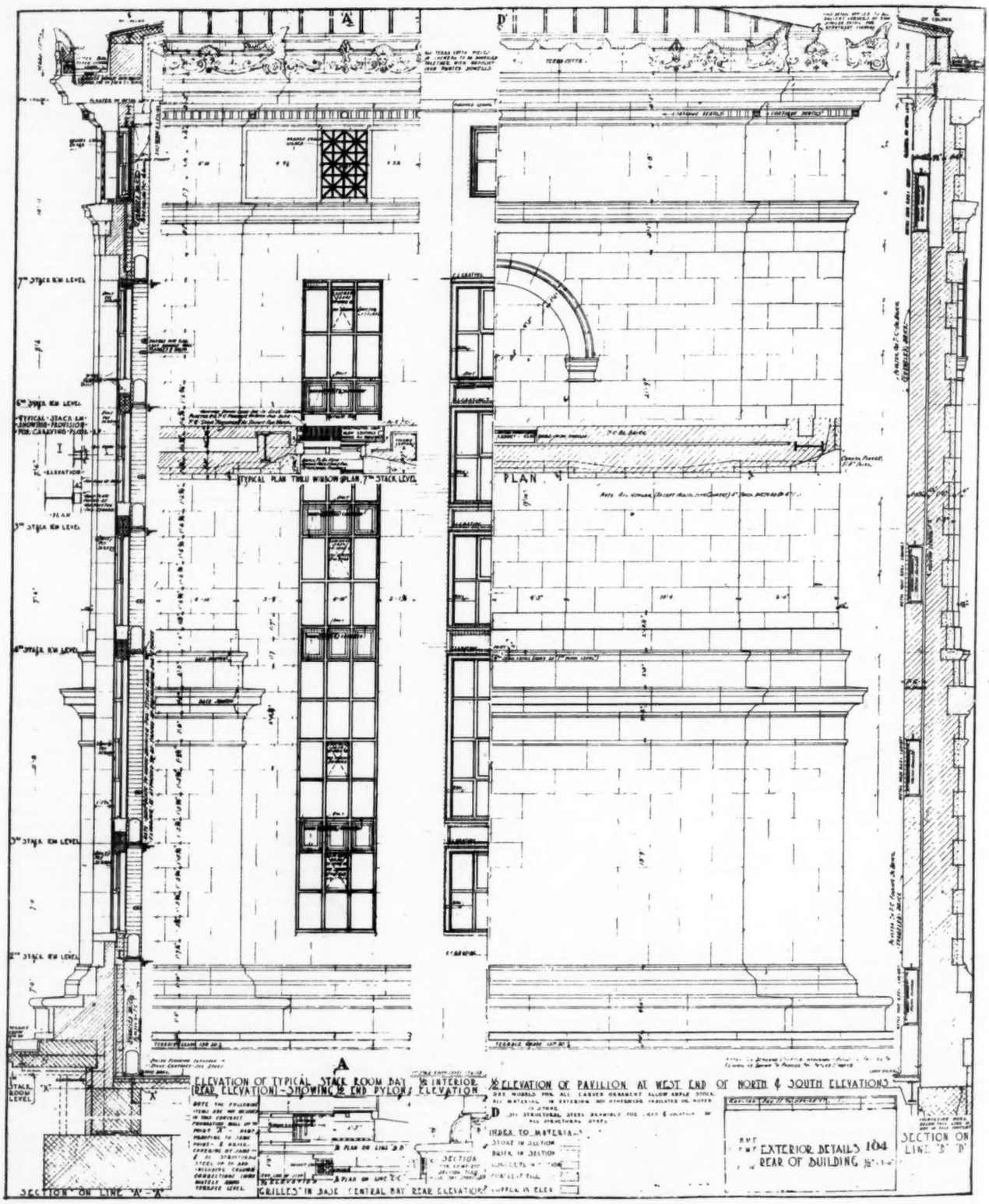
We deeply regret to record the death of Mr. Henry T. Hare, Past-President of the Royal Institute of British Architects and the Architectural Association, which occurred at his residence at Farnham Common on Monday last.

His work lay chiefly in the direction of public buildings, town-halls, libraries, and hospitals, among the more important of which are the following:—Staffordshire County Council Buildings (1892); Conversion of Claybury Hall, Woodford, into Lunatic Asylum, for the London County Council (1892-3); Municipal Buildings, Oxford (1897); Liverpool Technical School and Museum Extension (Henry T. Hare and T. Davison, architects, 1897); Presbyterian Theological College, Cambridge (1897); Public Library for Shoreditch Borough Council (Messrs. Spalding, Cross & Hare, architects, 1897); Henley-on-Thames Municipal Buildings (1898); Southend-on-Sea Municipal Buildings (1898); Isolation Hospital at Bromsgrove (Henry T. Hare and H. R. Lloyd, joint architects, 1899); Southend-on-Sea Technical School (1899); Technical Institute and Schools, Tunbridge Wells (1900); County Technical Schools, Stafford (1900); Isolation Hospital at Cradley Heath (Henry T. Hare and A. T. Butler, joint architects, 1900); Isolation Hospital at Longton, Staffs (1901); New Buildings at Church of England High School for Girls, Upper Baker-street (1902); Harrogate Municipal Buildings (1902); Wolverhampton Free Library (1902); Southend Public Library (1903); Pontypridd Municipal Buildings (1903); Crewe Municipal Buildings (1903); Hammersmith Library (1903); Harrogate Library (1904); Islington Library (1905); United Kingdom Provident Institution Building, Strand (1907); University College of North Wales, Bangor (1907); Fulham Public Library (1908).

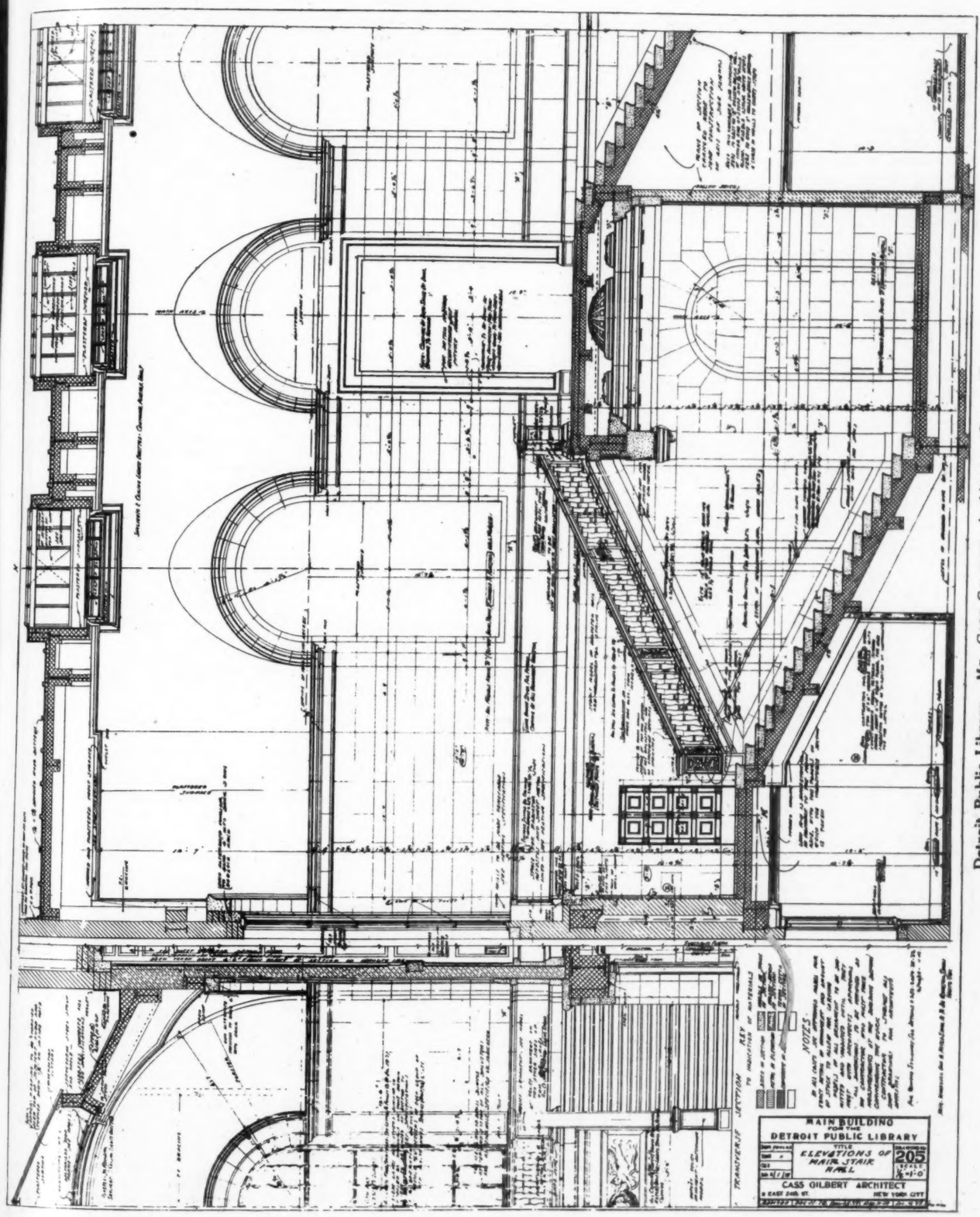
The business will be carried on by Mr. Bertram Lisle (Mr. Hare's partner) under the title of Henry T. Hare and Bertram Lisle, at the present address, 2, Gray's Inn-square, W.C.

Mr. W. Nicholson.

The death took place at Hampstead, on January 9, of Mr. Wilfrid Nicholson, Past Master and Treasurer of the Painter-Stainers' Company, in his hundredth year.



Detroit Public Library. MR. CASS GILBERT, Architect. (*See p.* 67.)



Detroit Public Library. MR. CASS GILBERT, Architect. (*See p.* 67.)

THE ARCHITECTURE OF CROYDON.

By LINDLEY LATHAM.

IN the editorial note on "Wrencote," Croydon (*The Builder*, August 13), that house is described as "one of the very few things in Croydon streets worth looking at." I quite agree that, considering both the present size and historical associations of the town, the things worth looking at are scarcer than they ought to be; but that they are "very few" seems to me rather too severe a judgment, and I think those readers who are not familiar with all of them, but may have opportunities of becoming so, should be given an indication of what there is, so that they may form (preferably after actual inspection) their own estimate of Croydon's architectural interest.

The ever-busy main street, impatiently hurried through by most road-farers between London and Brighton, contains nearly all the buildings I shall wish to refer to (I shall not attempt to deal with very recent work), and the rest all lie within a few minutes' walk from it. Entering the town from the north, the first object in Croydon proper that is likely to arrest the discriminating eye is the graceful stone spire of the West Croydon Congregational Church, on the left-hand side of the London-road, at the corner of Campbell-road. For a Victorian Nonconformist chapel, this is a work of extraordinary merit. The ingenious setting of the clock-dials sets one speculating whether a late thirteenth century architect, if church clocks had been general in his day, would have adopted the same arrangement! A little farther on, in Sumner-road (right), invisible from the high road, is the Anglican Christ Church, built in 1852, and very simply and effectively planned: aisle-less nave with west gallery, small galleried transepts, stone bell-turret supported between *two* chancel arches, and apse.

The next halt might be at West Croydon Railway Station, of which the oldest part was built for the London and Croydon Railway about 1839. No doubt most Croydonians regard the survival of the original structure as something to be ashamed of, and they have, at any rate, got it partly hidden by the erection of a row of mean shop buildings on the garden space which, flanked by the gate-piers of the approach roadway, formerly lay between the façade and the street. Yet the old station is not only interesting in the history of railways, but is a really pleasing example of the very latest phase of traditional Renaissance design. The brown stock-brick walls relieved by a pilaster order in fine yellow brick, the large sash-barred windows, and the louvred bell-turret, with its bold vane, all proclaim their legitimate descent from the great work of a century and a half earlier.

Above the houses just south of the station rise the red walls and roofs and green, copper-sheathed flèche of St. Michael's Church, Poplar-walk, perhaps the most perfect example in the London district of the art of J. L. Pearson. Somewhat marred externally by the unfinished tower, recently raised to about the height of the main roofs, internally the church is delightful.

From this point it is but a few minutes' walk to the unquestionable centre of the town, the famous "Whitgift Corner," and the Hospital of the Holy Trinity, concerning which enough has surely been written to make comment here unnecessary. From the pavement in front of the Hospital, looking down Crown Hill, there is a fine view of the pinnacled tower of the Parish Church—on a summer morning rising creamy-white and grey out of a mass of green, at evening a bold purple silhouette against the sunset. As a whole, the church is perhaps of more historical than architectural interest, as it is partly of genuine fifteenth century and partly of modern design; but adjoining the churchyard on the east is a really important relic of mediæval domestic building, the "Old Palace" of the Archbishops of Canterbury. Were this right in, or right out of, London, it might be as well known and appreciated as it ought to be; as it is, it is the Cinderella even of Croydon's antiquities. The Whitgift Hospital has at least been talked about, if often in ignorance and prejudice; but the Palace, being unassailable as an obstruction, seems subjected to a conspiracy of silence. No credit is due to the town for the fact that the buildings have been carefully preserved by the school which now occupies them.

In Church-street, a little to the north of the church, are the Ellis Davy Almshouses, which were founded as far back as 1447. Of the present buildings, the north block is mostly of plain eighteenth century work; the south block, built in 1887, is more or less a copy of it, but in bad-coloured bricks, and with the proportions of the windows spoilt. At No. 41, Church-street, an old butcher's shop, there is an unusual and commendable detail; the rectangular fan-light opening over the doorway is filled with bold, simple ironwork forming, in script capitals, the name of a former occupier, "JONES." The only fault one can find with this useful and decorative device is that, under modern trade conditions, it may be rather too permanent.

Of the numerous remains of early eighteenth century architecture to be found about Church-street and Surrey-street, one worthy of special mention is the "Old Dog and Bull" Inn, on the west side of Surrey-street, with its dignified front of purple brick relieved by bright red rubbers, dentil cornice, tiled hip roof, and wide elliptic arch to the yard entrance. On the opposite side of the road, "Butchers'-row" still bears its first-floor rooms on posts over the pavement; part, however, that was burnt out some years ago has been rebuilt on the old plan, but with walls of brick and stucco carried on iron stanchions—a horrid mixture of conservatism and lost tradition!

The greater part of the triangle bounded by Crown-hill, Surrey-street, and High-street was rebuilt and replanned in the great improvement scheme of 1890; and few will deny either the necessity for the clearance of old buildings which took place or the architectural value of the new work on the High-street frontage. Were dilapidated picturesqueness always replaced by modern buildings of character and refinement, as was mostly the case here, we should have far fewer occasions to deplore so-called improvements than we have at present. Nos. 4–36 and 48–54, High-street, including the Head Post Office, were erected about 1893–96—a period recognised as one of great architectural promise; and it is melancholy to note how unfavourably later re-buildings in High-street and North-end compare with them. Their styles and materials are most varied, yet the general effect, helped by the contour of the ground, is of harmony and dignity. Though they are but 25 years old, or thereabouts, some of them have been the objects of vandalisms as deplorable in their way as those inflicted on buildings 250 years old. Thus, the fine block, Nos. 14–18, has had the central entrance entirely spoilt for the sake of a few inches extra width of curved plate glass, while the delightful shop-front of No. 8 (till lately a chemist's), perfectly related to the delicately-detailed superstructure, has now been replaced by spreading abominations of "glass signs."

On the opposite, and unwidened, side of the High-street, at Nos. 27-31, is one row of houses which must date back at least to the early part of the seventeenth century. Of timber construction plastered, they present to the street four overhanging bay windows on the first floor, alternately with canted and quadrant sides, and a single dormer above. Recent visits to Ipswich and Colchester, where many old houses over shops are being carefully restored and hidden timber-work revealed, make me wish that Croydon was also a town where antiquity had a commercial value and was made as attractive as possible, and thus safeguarded both from decay and the re-builder. I would be lenient towards the humbug of "Ye Olde Shoppe" when it aids in the preservation of genuine old work. A few yards beyond, Katherine-street opens out a full view of the building whose great tower, by a combination of art and luck, dominates long stretches of the main road, both to the north and south—the Town Hall, the culmination of Croydon's building activities in the nineties. Concerning this pile, which will be familiar to all readers who have seen anything of Croydon, and should be fairly well known among those who have not, it need only be said here that it is certainly one of the things in the town that are worth looking at. The next turning but one beyond Katherine-street, on the same side of the High-street, is Friends-road, leading to Park-lane; and at the junction of the two latter roads stands the early eighteenth century residence known lately as "Friends House," but now St. Anselm's School. Widely different in character from its near neighbour, "Wrencote," it is quite as beautiful in its way, and happily is in no foreseeable danger of destruction. The most striking feature of the exterior is the richly-carved front doorcase, a design of much grace and originality.

Again proceeding southward along the High-street, one soon reaches "Wrencote," whose beauty and melancholy state have been recently commented upon in these columns. A little farther down on the same side of the street there is a pleasant pair of small double-fronted red-brick houses (Nos. 131 and 133), unspoilt work of about the middle of the eighteenth century; while at No. 143, an ugly house sandwiched between a brewery and a builder's yard, an interesting eighteenth-century door case remains (not in its original position), with a grotesque, and very diabolical, head on the keystone of its wooden arch. Down West-street, a turning nearly opposite No. 143, can be seen the gable end of St. Andrew's Church, a building, like Christ Church, of an unpromising period (1857), and naturally poor in detail, but quite worth inspecting for its successful treatment of a rather low, wide chancel, to which dignity is given by the reasonable device of the triple chancel arch, and the placing of the east window very high up in the wall.

Nos. 153–159, High-street, originally a block of private houses, all of which have been more or less altered, show characteristic work of a later part of the Georgian period than Nos. 131–133, the details being Adamesque; three-light windows under segmental arches, with joints radiating from the impost line, and fanlike fluting in the tympana; refined heads in high relief on the keystones of the elliptical door-arches, and Grecian ornament on the impost blocks. No. 159 is the last house in High-street, which is here crossed by Upper and Lower Coombe-streets and continued as South-end. Upper Coombe-street (left) remains a perfect type of an old country town byway, with houses of various social grades built right up to the narrow pavement. On the south side, as far as the first cross-roads, all are of respectable age, from the double-fronted and brass-knockered abodes to the ochre-washed cottages (Nos. 16–22) with their pantile roofs and microscopic windows, such as would now only be tolerated in the most superior work. On the north side (where there are some small front gardens), the first pair of houses (Nos. 1 and 3) make as charming a picture of unpretentious homes as one could wish to see. Of more countrified design than any of the buildings we have yet noticed, they are surely as informal as anything that came out of the eighteenth century; yet they are by no means formless, and their colour, as enhanced by time, is most beautiful. No. 23 ("Coombe Hill House"), at the corner of Park-lane, is a large detached residence of the same type as "Friends House" but of much less pleasing proportions, and ruined in its general effect by the glazing of the window-sashes with single sheets of glass. The wrought-iron gateway, however, with Tijouesque pilasters is well worthy of notice.

At the junction of South-end and Lower Coombe-street is the "New Inn," which, like

"New Inns" in other places, was new perhaps 200 years ago. The front is a good deal modernised, but the tile-hung back and curiously arranged roofs are unaltered and picturesque. Nos. 17 and 19, South-end (left side) are two early eighteenth-century houses combined into an L-shaped block, set well back from the roadway, so that between them and the pavement is a gravelled space, unenclosed, and planted with a row of old pollarded elms. No. 17, known as "Boswell House," faces the main road; it is very picturesque, but not specially interesting architecturally. No. 19 ("Boswell Cottage") has a narrow frontage to the road, with a door and a good round-headed window on the ground floor; but the principal front, to which the part adjoining South-end looks like an addition, is on the arm of the L at right angles to the street, and probably few passers-by notice its existence. It is an elegant composition with central doorway, dentil cornice, and dormers. At No. 42A (right side), over a hairdresser's shop, are two very good examples of "Venetian" windows with arches of gauged brick, and the sash-bars in the semi-circular heads forming intersecting tracery; while at No. 46 is a small gabled front of half-timber work, probably dating from the sixteenth century. It was restored when it might have been demolished, for which let us be thankful, but it is to be hoped that the quite "impossible" verge-board and the slate roof which at present disfigure it will one day be replaced by something better.

From the neighbourhood of the "Swan and Sugar-loaf" Hotel, where South-end forks to become Brighton-road (right) and Selsdon-road (left), the tower and spire of St. Peter's Church are conspicuous between the houses of the latter. This church, which must be the last item in my survey, was built in 1851 from the designs of Sir Gilbert Scott. As might be expected, it is on very conventional lines, but the tower has a good deal of nobility, and the placing of the building, on the side of a low hill, is most effective. This will be clearly felt if the church is approached from the Selsdon-road end of St. Peter's-road.

A Statue at Florence.

THE SOCIETY OF ARCHITECTS.

Annual Report.

THE Report of the Council of the Society of Architects for the year ended October 31, 1920, presented at the Annual General Meeting last night (Thursday), contained the following:—

EDUCATION AND EXAMINATION.—In view of the reorganisation of the Society's Membership Regulations involving a higher standard of architectural education expected from candidates, the whole question of the best method of testing the professional qualifications of candidates for admission to an architectural body has been under revision by the Education and Examination Committee. They have come to the conclusion that candidates who fail to do themselves justice when working in an examination room on questions to be answered within a given time could probably in most instances solve the problem if it arose in the course of their practice or duties, and they were able to devote sufficient time and attention to its elucidation. As the object of any examination for admission to a professional body should be to test the extent of a candidate's knowledge and qualifications, the Committee consider that the Society's examinations should be of such a nature as to give candidates an opportunity of displaying their qualifications to the best advantage, and that in certain cases an examination of the evidence of the work executed and of other testimonies of professional qualifications, experience and standing, with the addition where necessary of an oral examination, is more reliable as a truer index of a candidate's qualifications than is revealed by a scrutiny of written replies to theoretical questions. This being so, the Committee are of the opinion that the fairest system of examination for the purpose of testing the professional qualifications of candidates for the various classes of membership in the Society is one which provides for eligible candidates of the required age, seniority, experience, and standing to submit to a practical examination by the production of evidence of work executed and other testimonies, and, for others less experienced or who prefer to take the theoretical examination and compete for the awards, a combined practical and theoretical examination with the addition of an oral test. They further think that the examination Diplomas and Certificates of kindred professional bodies, and of architectural and technical schools recognised by the Society, should be accepted in lieu of the whole or part of the Society's examinations, as the case may be.

In order to encourage industry and reward merit, prizes of the value of £175 per annum, with gold, silver and bronze medals, are offered in connection with the membership (2b) examinations. The following have consented to act on the Board of Examiners in an honorary advisory capacity:—Professor A. E. Richardson, F.R.I.B.A.; Mr. A. J. Davis, F.R.I.B.A.; Mr. R. Atkinson, F.R.I.B.A.; Professor L. P. Abercrombie, M.A., F.R.I.B.A.; Mr. Henry Poole, A.R.A.; Mr. L. H. Bucknell, A.R.I.B.A.; Mr. Robert Lowry, F.R.I.B.A. The first examination under the new regulations is due to be held in April, 1921.

MEMBERSHIP.—The membership of the Society on October 31, 1920, was as follows:—Fellows, 93; Members, 1,146; Hon. Members, 24; Retired Members, 39; Licentiates, 37; Students, 102.

FINANCE.—The Finance Committee reports that during the past year the Society has had to meet greatly increased costs out of pre-war income, and the net result is a debit balance of £1,198 for the year. The general expenses have risen by £1,000, due principally to the rise in the cost of printing, stationery, postage, additional staff, and increase of salaries.

The revenue from subscriptions on the old basis is increased by £400 to a total of £2,623. Briefly, the financial result of the year's working shows that even with continued growth and expansion and economy in administration, the Society cannot, with rising costs, make both ends meet on a pre-war income, and the deficit is a justification of the Council's action in raising the subscriptions.

REGISTRATION.—A resolution in support of Statutory Registration was passed unanimously, and the Council have had preliminary negotiations with the Institution of Civil Engineers and the Surveyors' Institution on the subject of joint action, as both these Institutions have been discussing proposals for the registration of members of their respective professions. When the Society promoted a Bill some thirty years ago for the registration of architects, surveyors, and engineers, both the latter bodies objected to the proposals so far as they related to their members, and the Society devoted its activities to the registration of architects only, and is still pursuing that policy and only holding its hand so far as promoting a Bill is concerned, either singly or jointly with other interested bodies, pending the result of negotiations with the Unification Committee of the R.I.B.A.

The year under review, says the Report, has been one of the busiest recorded, owing to the continual growth and development of the Society. There have been 92 meetings, of which 75 were committee and council meetings, 10 members' meetings, and seven public meetings at Olympia.

The many other activities of the Society during the year have already been covered in *The Builder*.

"Victory" Scholarship Competition, 1920.

The Society of Architects' "Victory" Scholarship Competition was instituted in 1919, to commemorate the services of members of the Society in the war, and to perpetuate the memory of those who fell. It is open to any British subject under the age of thirty-five years.

The first *en loge* twelve-hour *esquisse* was held at the Society's Atelier, on May 1, 1920, the subject being "The Great Doorway of a National Pantheon." The object of this programme was to ascertain the ability of the competitors to study the proportions and attributes of monumental architecture, and to impart correct expression to the subject. Twenty-five candidates competed, and the jury of the Royal Academy Ateliers, Messrs. Robert Atkinson, F.R.I.B.A., Professor Richardson, F.R.I.B.A., and Mr. Arthur Davis, F.R.I.B.A., nominated by the Council of the Society as assessors, selected ten of the candidates to sit for the final competition on June 5. This consisted of a twelve-hour *esquisse*, the subject being "A National Manufactory for the Production of Porcelain," the finished design to be completed within six weeks. The object of this programme was to test the ability of the competitors to grasp the possibilities of the scheme and to group the buildings harmoniously.

Nine out of the ten candidates competed in the *esquisse*, but only two of them completed their designs. The Council, therefore, decided, in agreement with the competitors, to divide the 1920 final competition and the prize of £100, to duplicate the medal, and to hold another *esquisse* and competition on October 9, with a different programme open to all candidates who took part in the final competition on June 5. The subject of the additional competition was "A Lecture Amphitheatre forming part of a Group of Buildings housing Scientific Institutions." There were four competitors, and their designs had to be submitted by December 13. The jury assessed the whole of the drawings submitted in both competitions, and awarded the prizes as follows:—

Competition "A" (Porcelain Factory), Design No. 5.—Mr. Trenwith Wills, A.R.I.B.A., 24A, Yeoman's-row, Brompton-road, S.W. 3.

Competition "B" (Lecture Amphitheatre), Design No. 8.—Mr. F. P. M. Woodhouse, A.R.I.B.A., "Southmead," Wimbledon Park, S.W.

The prize money (which by the terms of the competition is to be utilised for educational purposes) and the gold medals were handed to the winners by the President of the Society (Sir Charles T. Ruthen, O.B.E., F.R.I.B.A.), at the annual general meeting last night, when the whole of the drawings were on exhibition.

THE CONCRETE INSTITUTE.

REINFORCED CONCRETE IN DOCKS.

AT the last meeting of the Concrete Institute, held at Denison House, Vauxhall Bridge-road, Mr. H. J. Deane read a paper entitled "Special Application of Reinforced Concrete in Docks," in which he specially dealt with the reinforced concrete gates at Tilbury Docks.

Among the worst conditions with which the engineer was frequently faced were, he said, those in which the geological formation consisted of unstable strata such as were found in many of the estuaries in Great Britain and elsewhere. In the Thames valley, for instance, the conditions were far less favourable than those where solid rock or chalk foundations could be obtained without much difficulty and at no great depth, and where the superimposed strata were of a much firmer character. Below London Bridge, and indeed within the tidal portions of the Thames, there were very few places where the chalk made its appearance except on the south side or right bank of the river from just above Greenhithe to just below Gravesend. The strata immediately underlying the northern bank below London Bridge consisted mainly of alluvium and river drift which had been deposited in the course of ages by the river itself. Going back still further geologically one found over a large part of the Thames valley the firm boulder clays which were capable of supporting very heavy pressures. Most of the lower Thames bridges were founded on that clay, and the tube railways were mainly constructed in it.

The alluvium, however, in which the Victoria and Albert and Tilbury Docks system were for he most part constructed was of a nature (particularly in the latter case) where difficulties were constantly being met, and although the original dock walls at Tilbury were constructed in open trench, yet when the Tilbury Main Dock Extension was first commenced the alluvium had become so soft, probably owing to its being saturated with water from the docks, that it was found impossible to proceed in open trench and the walls had to be carried down to gravel by sinking a series of monoliths side by side on the line of the quay walls. Those monoliths were built up of pre-cast concrete blocks, each layer breaking joint with the one below, and were designed so that four pockets or wells were left from which the material at the bottom could be grabbed out. As the material was removed so the monolith sank and more layers were built up. There was no reinforcement in the blocks, which weighed up to 5 tons each, the size of the monoliths being approximately 30 ft. by 30 ft.

On the River Clyde similar construction was adopted in many instances. It was doubtful, however, if reinforced concrete caissons or monoliths would have proved under the circumstances in either case as economical from the point of view of either cost or saving of time. It was quite within the range of possibility, particularly where cement and ballast were difficult to obtain, that such method would be found applicable in many instances, the dead weight required to sink the caissons being supplied by filling in the spaces with the material as it was excavated. At Valparaiso reinforced concrete monoliths were used in forming the Customs Quay Wall. They were built behind a temporary dam and when ready the dam was removed and they were floated into position. Their size might be judged by their net weight, which was 2,300 tons each. Somewhat similar monoliths were used at Copenhagen and sunk in position as caissons.

A number of examples were to be found where L-shaped walls had been adopted for river and quay work with the necessary stiffening brackets or gussets to support the vertical portion against both external and internal pressure. In some cases they had been built *in situ* and in others they had been pre-cast in sections and deposited in place on prepared foundations, the back filling being afterwards made up to correct level with suitable material. A notable example of an L-shaped wall was to be found in Sydney Harbour, where pre-cast trestles were sunk into position on a prepared rubble bed and the space behind filled up and reclaimed. The total length of wall was about 1,350 ft., and it served as a retaining wall and quay wall combined, the total height of each trestle being 21 ft. 6 in. with a 15 ft. horizontal leg and a width of 3 ft. 6 in.

The original designs for the quays immediately behind the quay walls at Tilbury Docks did not take into account the extraordinary nature of the ground, as no experience had been obtained of its want of stability. The quays were simply surfaced with ordinary concrete. The heavy traffic and the yielding ground underneath had, however, produced a state of things which now and then necessitated pulling up the old concrete, filling up the spaces due to settlement, and then re concreting; but the underlying material never became properly solidified, and for any further extensions the question of constructing such quays in reinforced concrete with suitable supports would have to receive careful thought.

Lock entrances and graving docks formed essential features of most dock undertakings, the provision of lock entrances being determined by the consideration as to whether the range of tide was large enough to necessitate the conservation of the water in the docks. The growth in dimensions of ocean-going vessels required the provision of locks and graving docks of suitable size for their accommodation. To-day their proposed dimensions ranged up to 1,300 ft. in length by 130 ft. in width with 54 ft. of water. The enormous cost and magnitude of such works would be appreciated, and where difficulties were met such as those experienced in connection with the Tilbury Docks, the skill required in their design and execution must be of a high order. There would appear to be very considerable scope here for adopting reinforced concrete caissons which could be erected *in situ* and subsequently sunk to the correct level, or possibly by dredging out a wide trench the caissons could be floated into position and sunk, the slope behind being subsequently filled in. There would no doubt be many disadvantages in such a scheme, but it remained to be seen whether the balance was not in favour of the advantages, among which must be taken into account the possibility of filling up the cells or voids from the excavations by what was termed in America "hydraulic fill."

Floating dry docks had many advantages over the ordinary graving dock, more particularly where local circumstances made the construction of the latter difficult and costly. Such docks were generally built of steel or iron, the latest designs being the self-docking floating docks which had for their object the ready repair and painting of the various component parts, and which were normally submerged. The maintenance of such structures added enormously to the cost of working, and the loss of revenue during the time repairs were being carried out was a very considerable item. Already, however, the advantages from the use of reinforced concrete had been recognised, and one (if not more) of such docks had been constructed and was now in use.

In America launching (or slip) ways 990 ft. long built in reinforced concrete were erected in connection with the construction of some new warships about three years ago, and in the same country a group of ten ways 270 ft. long were constructed for the repair of river patrol vessels on the Missouri.

Reinforced concrete had been extensively used in groynes and sea defence works, more especially in Holland, where some very ingenious interlocking devices had been adopted for the purpose of preventing erosion of the banks of dykes and river walls. The design overcame the disadvantages connected with continuous structures by providing pre-cast flat slabs 18 in. square by 2½ in. thick and placing them chess board fashion, the white squares having lips or projections under the black squares, which in turn were kept down in place by concrete pegs. That type had been used on some of the river walls near Canvey Island, but it was not suitable in places where heavy seas were likely to occur.

THE HOUSING PROBLEM.

WE take the following from a letter to the *Times* last week by Dr. E. Hopkinson, M.P., in which some pertinent criticisms are made on the policy of the Ministry of Health and the Government with regard to housing:—

"Words cannot adequately describe the latest excursion of this astounding Ministry. In its cringing fear of a trade, long reputed by fellow-tradesmen to be marked by obstinacy and ignorance, the Ministry has servilely offered the building unions a bribe of £5 a head, in the form of a training grant, in order that His Majesty's Government may be allowed to find employment on building work for those who have fought for us during the war!

"Owing, in part, to the unavoidable inflation of prices consequent upon the war, but also in no small measure to want of trust in the working of the ordinary laws of supply and demand and to the Ministry's fear, on the one hand, of the building trades concerned, and on the other hand of the purveyors of building material, the local authorities have been forced to undertake building schemes on a large scale on an utterly impossible economic basis. What is the position as it stands to-day? Approximately half a million houses are required to make up the present shortage. Taking, for the sake of brevity, round figures, the cost per house, with accessories, is not less than £1,000. The economic rent of such a house, under present circumstances, is not less than 27s. per week, apart from rates. It is admitted that the working classes, whether they can or cannot pay such a rent, will not do so; therefore, the nation must be taxed to provide the houses. Assume that the rent obtainable from the householder is 15s. per week, exclusive of rates. There will thus be ultimately an annual deficit of £15,600,000. The local authorities are by law under obligation to contribute a penny rate for seven years towards this deficit—a mere bagatelle! The huge remainder must be made good by the Exchequer—an appalling prospect for some future Chancellor. But at present, the complacent Minister, Micawber-like, hopes that something will turn up, and that, at the end of seven years, in some unforeseen manner, all will be well and an economic rent forthcoming. The probabilities are all in the other direction. As a whole, the nation will be by then sick of the continuance of class subsidisation. Workpeople having become accustomed to spend a small proportion of their income on rent will not readily change their habit, and either the local authorities or the Government will be bankrupt as far as housing is concerned. Money has to be borrowed to build the houses. The public, more farsighted than the Government, will not find it except on abnormally high rates of interest. Moreover, the building trades, having brought the Minister to heel, will not build, nor will the master builders, who have not forgotten the effect of the land taxation under the 1909–1910 Budget. Consequently, both must be bribed—the first in ways already discussed; the second, by building subsidies, budgeted this year, together with other housing grants, to amount to £11,000,000.

"It is right that restrictions on the acquisition of land on reasonable terms for building cottages should be removed by legislation. It is right that building regulations should be enforced limiting the number of houses per acre, and that the congested slums of the past should be impossible in the future. It is right that local authorities should be encouraged to improve the means of access from industrial centres to the surrounding country. But it is not right to build houses costing £1,000 a-piece, which we cannot afford owing to the impoverishment of the nation after four years of wealth-draining war. Is it not better to build them costing half that sum? If the rent of a front parlour cannot be covered, is there any great hardship in being content with the larger, roomier and warmer kitchen? If wall-paper is too expensive, will not whitewash take its place to sanitary, and it may be also to æsthetic, advantage."

BEVERLEY HOUSING SCHEME.

WE have received the following notes on the Beverley housing scheme from Mr. W. W. Love ("Anglo-Australian Resident Engineer"):—

With pre-war methods of construction, the present-day builder cannot expect to do much in the way of housing in three months in this country. From practical experience on large public works contracts abroad, I know the value of concrete for structural purposes, if properly handled by machinery and native labour under European supervision. The solution of the housing problem is the introduction on a very extensive scale of machinery and unskilled labour into building. In order practically to demonstrate that ex-Service men are capable of building cottages with the aid of up-to-date machinery, on the contract for 145 houses at Beverley, eighty per cent. of the men are ex-Service men with little or no experience of ordinary methods of building construction.

The job was commenced in June, and in less than three months from the time of commencing concreting, the foundations were completed for 70 houses; excavations completed for 82 houses; ground floor pillars cast for 60 houses and erected for 45 houses; connections to sewers made for more than 100 houses; and other work in the way of breeze slab casting, upper floor trusses, &c., well in hand. The average number of men employed has not exceeded 60, and practically no overtime has been worked.

I know the advantages of concrete, if properly handled, for rapid and economical construction, and its possibilities for artistic finishes on the American principle. One brick at a time laid by hand and trowel labour, with one man looking on the greater part of the time whilst the bricklayer lays his 300 bricks a day, must be superseded by pre-cast reinforced concrete standardised units when this method of construction becomes more generally known in this country.

The foundations consist of concrete base blocks; no trenches are required as for brick walls, and, consequently, 75 per cent. of the usual excavation is dispensed with. The area of the base blocks is spread to carry the constructive weight and superimposed load of the building. The base blocks are cast in place and sinkings are provided in them to receive the pre-cast pillars. The lower portion of the base blocks is of reinforced concrete, 9 in. in thickness. Core boxes are placed in alignment frames upon the concrete foundations, and these keep the core boxes plumb and in line. The concrete is filled in to a depth of 2 ft. around the core boxes, and when it has stiffened the core boxes are withdrawn, leaving the sinking for the pillars. The pillars are 9 in. by 9 in. in section, and reinforced to carry 10 tons each. They are pre-cast on a sand base, thirty-two at each casting; the edges have "V"-shaped sinkings, and wire links, in the form of staples, project from the edges of the posts to form a bond with the pre-cast wall slabs.

Upwards of 500 columns had some time since been pre-cast with side-boards only; these boards may be used indefinitely for any number of houses. The outer face of the pillars is cast uppermost and is exposed for finishing with the float whilst in the frame, thus making a more solid job than if rendered in the old-fashioned way. The inside face of the posts is cast on a sand base, which leaves a good key for plastering. The upper floor trusses, consisting of floor beam, front and back pillars, tie beam, king post and rafters, are pre-cast as single units and erected by crane power. Pillars for four houses have already been cast in a day, and pillars for eight houses erected in a day; this number can be multiplied indefinitely by increasing the number of men and leading hands. For concreting, light portable concrete mixers with petrol engine on the same carriage are used. Two mixers are now at work, and it has been found that a mixer of 7 cubic ft. capacity is most suitable.

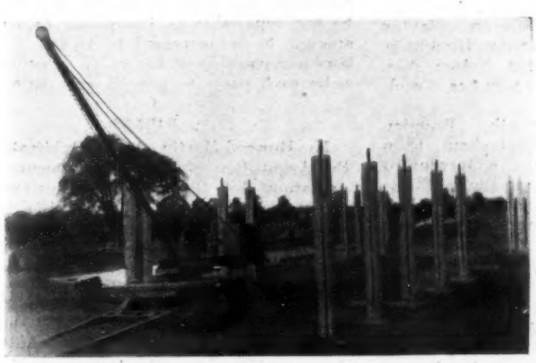
There has been no difficulty in obtaining all the necessary labour. It is just as easy to organise works to build 1,000 houses as 145 on this system; it is simply a matter of increasing the number of men, and there are thousands of suitable intelligent ex-Service men available.

As such rapid progress was being made in pre-casting and erecting the pillars, it was decided to shutter some walls and cast them *in situ* whilst the remainder of the cavity wall slabs were being pre-casted and matured. Shuttering and casting *in situ* was found to be so slow and costly as compared with pre-war times that it had to be abandoned. The time lost whilst waiting for the pre-cast slabs to mature can soon be made up, in addition to which much better work can be done with unskilled labour and casting frames.

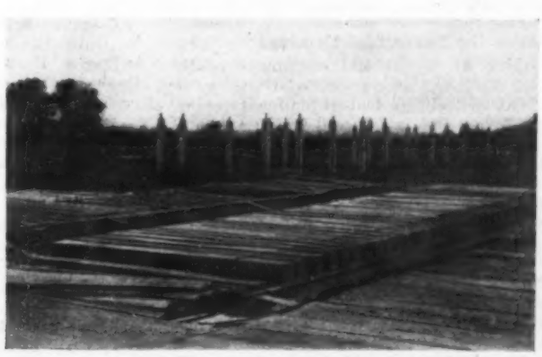
On the ground floor a saving of 50 per cent. of the timber in plates and joists is effected, and no sleeper walls are needed. The whole of the site is covered with 4 in. of concrete as usual, and the floor properly ventilated. Blocks are pre-casted 4 in. by 4 in. by 5 in. deep; a 4 in. inverted wire nail is inserted into the centre of each block at the time of casting, the pointed end projecting 1½ in. above the surface of the block, and "V"-shaped recesses are cast in two sides of the blocks. The blocks are placed in rows, 18 in. centre to centre, and a special alignment frame in the form of a double straight edge is used to keep the blocks in line and the upper surface level. The blocks are roughly surrounded with concrete, after which they are concreted in with 4 in. of concrete over the site. The blocks being 5 in. in depth, they stand 1 in. above the surface of the surrounding concrete, leaving an air space for ventilation under the 3 in. by 1½ in. battens driven on the projecting nails as flooring joists. Air bricks are provided in the plinth beams. If desirable to comply with existing regulations, small discs of bituminous asphalte may be inserted on the nails between the small concrete blocks and battens, to provide a damp-course below the lowest timbers.

Alignment Frames and Core-boxes for foundations.

Concrete Blocks with Inverted Nails for fixing battens.



Erecting Pillars by Crane Power.



Moulding Concrete Pillars in batches of thirty-two.

Beverley Housing Scheme.

HOUSING AND TOWN-PLANNING NOTES.

Municipal Brickworks.

The Glasgow Corporation has sanctioned an expenditure of £45,000 for the acquisition of a brickworks at Dalry, in order to obtain an adequate supply of bricks for its housing schemes.

Blackburn Development.

The Blackburn Corporation has decided immediately to put in hand the construction of an arterial road, the road-making and sewerage work on the Brownhill housing site, and the laying-out of the Roe Lee Park and recreation ground, in order to provide work for the unemployed.

The Cost of Building.

The Hemsworth Rural District Council has declined to accept a tender for the erection of 68 houses, as it worked out at over £1,000 per house, and has decided to advertise for fresh tenders and to invite the building trade unions to take on the work on the Guild system.

The Building Guilds.

The Wilmslow Urban District Council has decided to accept the tender of the Builders' Association for the carrying out of the housing schemes in the northern district. The "A" type of house is to cost £680 and the "B" type £900, the profit per house to be £40. The tender of the Building Guild was £675, but a proposal to accept this was defeated.

Housing Finance.

The Nottingham Corporation has passed a resolution that no further schemes for acquiring or building houses be considered until the Corporation is satisfied that arrangements have been made for the provision of the necessary capital. It was pointed out that the Corporation had already authorised the expenditure of £1,400,000 for housing, but so far only about £500,000 had been raised.

The Office of Works and Housing.

As it considered that the tenders received by the Hove Town Council for the erection of 180 houses were excessive, the Ministry of Health proposed to carry out the work itself, through the Office of Works, by direct labour. The Town Council protested against this arrangement, and the Office of Works has now offered to erect 90 houses with 75 per cent. local labour, provided it is allowed to supervise the carrying out of the contracts and supply the plans.

Walton-on-Naze Developments.

Plans prepared for the laying-out of the Warner estate at Walton-on-Naze, Essex, have been placed before the Urban District Council by Messrs. Boreham & Gladding, architects and surveyors, of London-wall, E.C., and unanimously approved. The proposals include, in addition to the formation of a new road and the widening of existing roads, a recreation ground for cricket, football, tennis and bowling and for children's games; a bungalow town; a large concert hall; an arcade of shops; and various residences. The land to be thus laid out is near the site of the Council's housing scheme.

The Standard of Housing.

Speaking at the annual conference of the Scottish Labour Association, in Glasgow, on Tuesday last week, Mr. Robert Smillie, President of the Miners' Federation, said he did not think any housing reformer could be satisfied with the houses which were being built, with ceilings only 8 ft. 6 in. in height, which provided insufficient breathing space. If decent houses were provided, the working classes could be educated up to paying increased rents. Mr. E. Guy Dawber, F.R.I.B.A., in a reply to Mr. Smillie's remarks as to the height of ceilings, states that the majority of modern houses in suburban and country districts have for years past been built with ceilings from 8 ft. to 8 ft. 6 in. high, and that height is generally accepted by local authorities as one that satisfies all requirements of health—even London does not demand more. Nothing is gained except in appearance by making dwelling rooms higher, as the foul air only accumulates in the upper part and cannot be got rid of so easily as in the case of lower rooms where windows can be carried nearly to the ceiling. The size and shape of rooms do not produce ventilation, which depends on the inlet of fresh air and the extraction of foul air. In small houses, low ceilings conduce to comfort and convenience, as they can be more easily warmed and ventilated.

WEEKLY HOUSING RETURN.

Progress of housing schemes up to December 31: Schemes submitted, 11,441; approved, 11,062. Lay-out schemes submitted, 7,005; approved, 6,423. House-plans submitted, 284,480 houses; approved, 268,002. Tenders submitted, 182,873 houses; approved, 169,235. Contracts have been signed for 137,857 houses.

Schemes dealt with during the fortnight ended December 31:—Schemes submitted, 49. Lay-outs submitted, 49; approved, 49. House-plans submitted, 1,881 houses; approved, 1,669. Tenders were submitted for 3,088 houses, and approved for 2,538. These inclued the following:—

APPLICATIONS.

SITES.

URBAN.—Ashington, 23.22 acres; Cambridge, 11.5; Sheffield, 29.52.

LAY-OUTS.

URBAN.—Belper, Bilston, Bolsover, Finchley, Leicester, Malvern, Nottingham, Rochdale, Royton, St. Anne's-on-Sea, Seaton Delaval, Southwick, Worcester.

RURAL.—Aylesbury, Bedale, Brixworth, Durham, Erpingham, Howden, Kettering, Kingsclere, Kingswinford, Knighton, Long Crendon, Lunesdale, Norton, Maldon, Rock, St. Faith's, Skirlaugh, Strood, Swavesey, Wycombe.

HOUSE-PLANS.

URBAN.—Bolsover, 133 houses; Bradford, 12; Chepping Wycombe, 44; Finchley, 200; Folkestone, 6; Hayes, 191; Heanor, 36; Honiton, 48; Huddersfield, 5; Leicester, 46; Litherland, 76; Liverpool, 100; Nelson, 440; Newbury, 22; Nottingham, 9; Penge, 14; Rochdale, 56.

RURAL.—Aylesbury, 30 houses; Bromley, 16; Chipping Norton, 36; Cookham, 6; Erpingham, 4; Howden, 20; Isle of Thanet, 34; Kettering, 24; Kingsclere, 16; Kingswinford, 46; Knaresborough, 12; Maldon, 14; Neath, 2; Norton, 24; Oxendon, 6; Rock, 4; Romford, 10; Rye, 12; St. Faith's, 6; Skirlaugh, 24; Strood, 22; Swavesey, 3; Tendring, 10; Wokingham, 4; Wycombe, 42.

COUNTY COUNCIL.—Lancashire, 2 houses.

APPROVALS.

SITES.

URBAN.—Bridgend, 52.57 acres; Seaton Delaval, 12.37.

RURAL.—Rotherham, 12.41 acres.

LAY-OUTS.

URBAN.—Bacup, Bilston, Bolsover, Clayton W., Garforth Gosforth, Hale, Heanor, Houghton-le-Spring, Huddersfield, Malvern, Nelson, Nottingham, Portsmouth, St. Anne's-on-Sea, Twickenham, Worcester.

RURAL.—Bourne, Brixworth, Bromley, Chapel-en-le-Frith, Epping, Erpingham, Eton, Isle of Thanet, Kettering, Kingswinford, Knaresborough, Llandaff and Dinas Powis, Long Crendon, Lunesdale, Maldon, Malton, Rock, Rye, St. Faith's, Swavesey, Tendring, Thirsk.

COUNTY COUNCILS.—Lancashire, Yorkshire (E. Riding).

HOUSE-PLANS.

URBAN.—Bolsover, 138 houses; Bradford, 12; Clayton West, 36; Finchley, 200; Folkestone, 6; Garforth, 18; Hayes, 191; Heanor, 36; Huddersfield, 5; Kendal, 46; Litherland, 76; Liverpool, 100; Nelson, 440; Nottingham, 9; Penge, 14; Portsmouth, 18.

RURAL.—Bromley, 16 houses; Cookham, 4; Epping, 10; Erpingham, 4; Eton, 50; Flaxton, 24; Headington, 6; Isle of Thanet, 44; Kettering, 24; Kingswinford, 46; Knaresborough, 12; Long Crendon, 4; Maldon, 14; Rock, 4; Rye, 12; St. Faith's, 6; Swavesey, 3; Tendring, 10; Thirsk, 7; Wokingham, 16.

COUNTY COUNCILS.—Durham, 1 house; Lancashire, 2; Yorkshire (E. Riding), 2.

Tenders Approved.

URBAN.—Acton, 2 houses; Bicester, 20; Bradford, 12; Brandon and Byshottles, 133; Brighouse, 16; Featherstone, 24; Golcar, 3; Great Torrington, 2; Ham, 20; Handsworth, 24; Hornsea, 3; Knottingley, 26; Leighton Buzzard, 10; Letchworth, 15; Liverpool, 600; Lyme Regis, 10; Lymm, 50; Manchester, 50; Milnrow, 54; Newquay, 2; Newton Abbot, 2; Nottingham, 19; Rotherham, 102; Swanage, 14; Thurston'and, 8; Widnes, 371.

RURAL.—Alnwick, 12 houses; Amesbury, 68; Ampthill, 10; Basford, 22; Bath, 12; Bedford, 8; Belper, 8; Bideford, 8; Blackburn, 12; Bridport, 14; Chailey, 2; Chipping Sodbury, 24; Crediton, 6; Crowmarsh, 4; Dartford, 66; E. Ashford, 28; E. Kerrier, 59; E. Preston, 16; Hatley Wintney, 24; Havant, 6; Headington, 6; Hexham, 8; Hoxne, 6; Lexden and Winstree, 4; Lydney, 6; Market Harborough, 10; Marshland, 4; Morpeth, 150; Okehampton, 4; Oxendon, 6; Poole, 12; Ramsbury, 6; Reigate, 6; Repton, 88; Shepton Mallet, 12; Southam, 20; S. Molton, 8; Sturminster, 32; Taunton, 4; Torrington, 12; Wantage, 90; Wareham and Purbeck, 20; W. Hampnett, 6; Wokingham, 4; Woodstock, 4.

LAND FOR HOUSING.

WEALDSTONE.

At the Surveyors' Institution, Westminster Mr. Howard Martin, Official Arbitrator under the Acquisition of Land (Assessment of Compensation) Act, 1919, recently heard a claim by the Weald Villages, Ltd., against the Wealdstone Urban District Council, concerning the Council's compulsory acquisition of about 23½ acres of land for housing purposes. The land is situated in Meadow-way, Green-way, Montrose-road, and Risingholme-road, Wealdstone.

Mr. Cuthbert J. Lake, surveyor, gave a total valuation of £15,190, based on values of £5 to £3 per ft. frontage, and including four tennis courts at £300 each, and other matters.

On behalf of the Urban Council, Mr. W. H. Bamford, District Valuer, gave a total valuation of £5,592, basing it on values of £3 5s. to £3 per ft. for frontage, and deferring certain portions for two and four years at 6 per cent.

The Official Arbitrator has now issued his award in the following terms: "That the Acquiring Authority is to erect and maintain on the north boundary of the land to be acquired a sufficient and suitable fence, and is to pay the claimants the sum of £6,445 if Church-lane be not repairable at the public expense, this amount to be increased to £8,445 if Church-lane is repairable at the public expense, and I order each party to pay its own costs."

BARNES.

Mr. Howard Martin, Official Arbitrator under the Acquisition of Land (Assessment of Compensation) Act, 1919, has issued his award in a claim against the Barnes Urban District Council by the Fitzgerald Trustees (Mr. Edmund Royds and Mr. John Francis Gray Gilliatt) concerning the compulsory acquisition of 8½ acres of freehold land for housing purposes. The land is situated between Manor Grove and Clifford-avenue, Mortlake. The award is in the following terms:—"That the Acquiring Authority is to pay the claimants the sum of £3,105, and I order the claimants to contribute £25 towards the costs of the Acquiring Authority."

THE BUILDING TRADE.

CONDITIONS OF BUILDING CONTRACT.—II.*

[Reviewed and Considered with Special Reference to the Proposed National Building Code for England and Wales; Revised R.I.B.A. Contract, 1920; Society of Architects' Contract, 1919; and Ministry of Health Housing Contract, 1920.]

[This series of articles has been written by a barrister-at-law and a solicitor, who are fully conversant with the subject; but we wish to emphasize the fact that their views are not necessarily our own.]

Incidence of Risk for Unforeseen Happenings During the Contract.

While certain individual contractors may be found who are fond of taking, at a price, the risks of every possible contingency or happening in the execution of work (and men have risen and fallen in the world of contractors by doing so), the present-day building contractor, through his Federation, takes the view that his business will suit him better, and the industry become more efficient and stabilised, if this element of risk is removed, and there are, no doubt, very good grounds for this view. Under the older forms of contract this element was always present, and competition very often obliged the contractor to take the risks on very fine margins.

Each party to the contract had practically an equal opportunity of gauging the likelihood of whether the events in question would or would not occur, but the entire risk in connection with such events was borne by the contractor who, though he might carry out the works required entirely in accordance with the instructions received from the employer† or his representative, was yet liable to have his margin of profit entirely destroyed by the occurrence of some event over which he had no control whatever and which he was entirely powerless either to anticipate or prevent, *e.g.*, rises in prices of material or wages, strikes and other labour troubles, war, bad weather, and the passing of Acts of Parliament (such, for example, as the National Insurance Act), affecting the cost of the work.

While it is, no doubt, extremely desirous, from the employer's point of view, that he should be able to ascertain, before commencing to build, exactly what the work is going to cost him, it is, nevertheless, not unreasonable to argue that the person who desires the erection of a building should be prepared to pay the reasonable cost of erecting the same, whether the estimated cost be less or more than the actual cost, together with a reasonable margin of profit for the person doing the work, subject to the employer being duly safeguarded against unnecessary expense arising from causes within the contractor's control.

The war has, of course, emphasised the need for a change in system, and the instability of labour rates and the material market has led contractors to the conclusion that i is not possible to tender on the pre-war conditions in regard to these matters. On the other hand, the question whether *all* risks should be transferred from the contractor to the employer is a matter worthy of serious consideration.

While it should not be attempted to cast upon the contractor the sole liability in respect of entirely unforeseen contingencies wholly beyond his control, it would be a short-sighted policy to do anything that would deprive an employer of the benefit of a contractor's skill, organisation, initiative and knowledge, and many contingencies, unforeseen as they may be, are yet of such a nature that the contractor may, by the exercise of the qualities above referred to, overcome the difficulties arising from them. Contractors ought not to shirk their responsibilities in such matters, nor should they claim to be put in a better position than other commercial men in connection with the ordinary business risks common to practically all commercial enterprises, unless their own industry gives special reasons for such differentiation.

The Society of Architects' form and the new R.I.B.A. form of contract adhere to the older system of placing upon the contractor all the liabilities for this class of risk, with the exception that in both cases they provide that the contractor shall be given a reasonable extension of time for completion of the work for circumstances outside his control. This, of course, is merely a protection against claims by the employer for pecuniary penalties for failure to complete within the contract time, and gives no pecuniary compensation to the contractor for the extra expense to which he is put either by reason of delay or for damages to the works.

The Ministry of Health Housing Contract similarly imposes the responsibility for most unforeseen happenings during the progress of the work upon the contractor, but specifically provides for adjustment of the contract price due to any change in the cost of labour or the cost of materials during the currency of the contract.

None of these contracts, of course, go nearly far enough in the opinion of the building contractors, and the new proposed National Building Code treats the matter in a manner very favourable to the contractor.

In the first place, in the Form of Agreement in the Code, the undertaking of the contractor to carry out the work is given "*force majeure*, the Acts of God, the King's Enemies, the restraint of Princes and Rulers always excepted." while on these grounds the conditions provide that the contract may be dissolved and the contractor entitled, but not bound, to remove from the premises any materials supplied by him but not fixed to the soil and his plant, and shall be entitled to be paid the fair value of all materials supplied to or prepared for the works, including any plant not removed and all labour done by him in connection with the works, while, if the contract is not dissolved, and in case of war "affecting the British Isles," the increase in value of plant, materials or labour shall be paid to the contractor plus 10 per cent. for contractor's profit.

It would appear from these provisions that not only would the contractor not suffer by a state of war or any of the acts referred to, but might reasonably profit by a calamity which is no less to the employer than to himself, and there seems to be no justification for the provision that contractor's plant shall be paid for by the employer nor that the contractor shall be paid profit upon increased cost. It appears to be a case where, if protection is given to the contractor enabling him to dissolve the contract by reason of war, he should only be able to do so for his own financial security and not for his definite benefit, or that if he proceeds with the work in spite of such war he should do so on conditions which are not more favourable to him than those which would have applied had there been no interruption.

Other provisions in the Code entitle the contractor not only to extensions of time but also to any extra costs or expenses which he may incur in consequence of the works being delayed by practically every cause of delay not within his entire control. Such delays include disputes with, or proceedings taken relative to the works by, any public authority or any person outside the contractor's control; failure of the employer to give possession, &c.; temporary suspension of the works by the employer, exceptionally inclement weather; shortage of local labour; delay or difficulty in obtaining special materials or materials of unusual size or nature; delays by specialists or approved sub-contractors (both of whom are by the Code in direct contractual relationship with the contractor); delays in payment when due; delays by reason of variations and extras or by any other cause outside the contractor's control; and if delays in connection with any of the above matters should prevail for more than three months the contractor is entitled to cancel the contract and recover from the employer (*a*) payment for work executed, (*b*) any loss he may sustain on plant or material purchased or used for the work, and (*c*) a sum for profit on works still uncompleted.

Now, it is quite clear that in certain respects the above provisions are unreasonable. Not only will they be the cause of much dispute and lead to many ingenious but unjustifiable claims by unsatisfactory contractors, but they place upon the employer the liability for expenses due to delays which may in some cases be avoided or contributed to by the contractor himself, and who, if he were responsible, would by his experience and knowledge of the work be able to avoid altogether or materially reduce.

It is, therefore, suggested that there should be a clear distinction between delays and obstructions to the work which cannot be foreseen and which no amount of foresight and ability on the part of the contractor can avoid, and those in regard to which the contractor as a skilled commercial man should properly be called upon to take the risk. For example, it is suggested that in the first place the employer should properly take the risk of Acts of God, war, King's enemies, and similar happenings, up to the point that he will allow the contractor the net increased cost of completing the works in the circumstances that arise thereby, or allow him to cancel the work and pay for such work and material as has been done and supplied on a *quantum meruit*. Secondly, the employer should reasonably be responsible for any damages resulting to the contractor by reason of failure to carry out his (the employer's) part of the bargain, that is to say, to hand over the site, to give the necessary instructions to his architect, to make proper agreements with public authorities and adjoining owners so that the carrying out of the work does not in any way contravene their rights, and to make payments to the contractor in accordance with the contract. In the third place, it is suggested that the proper person to take the responsibility for the supply of labour, obtaining material, and expedition of approved sub-contractors (unless caused by acts of God, war, &c.), is the contractor, and that it would be seriously unfair to charge the employer with extra payments to the contractor for delays in these matters, provided the contractor is entitled to an extension of time should any of these matters which are outside his control cause delay in the work.

The Powers of the Architect and Clerk of Works.

When a building contractor has tendered for work on precise information, and knows exactly the details of the work that he has to carry out, the work should, in his opinion, be entirely under his control from the moment that he goes

---

* In our last issue were given a Foreword and a chapter on the Accuracy and Completeness of Information given to the Contractor for Tendering. Future chapters will include: Payments and Retention Money; Assignment and Sub-letting of Contract; Use and Misuse of Schedule of Prices; Prime Cost and Provisional Sums—Sub-Contractors; Settlement of Disputes

† The term "employer" is used throughout merely in the sense of the party to a building contract described as the Building Owner or Employer.

upon the site of the work to undertake it until he hands back the completed work to the employer; and, having regard to the fact that he is under an obligation to supply the finished article in accordance with definite plans and specifications for a definite price, he contends that the method by which he produces the finished article, the manner in which he arranges and organises the work, the order in which various parts of the work are undertaken, &c., must all be under his entire control with a view to enabling him to earn, in the manner of doing the work, the profit to which he is entitled. There can be no possible objection from his point of view to the architect, or his inspector, closely scrutinising the work during its construction, making such records of the work as the architect and clerk of works think fit, and, if need be, drawing his attention to defects in the work which must, before completion, be remedied in order to obtain a satisfactory job.

This, however, does not appear to be, in the opinion of many architects and engineers, by any means the limit of their powers under the contract, and it is a well-known fact that dissension and friction are frequently caused on building works by reason of the alleged interference by architects and clerks of works in the methods adopted by the contractor and his organisation. The contractor's foreman and the clerk of works do not as a rule see eye to eye in regard to their respective positions on such works. The fact that the former is often the better-paid man and the latter a supervisor often leads to some irritation on one side and jealousy on the other, expressed in obstructive measures on both sides.

The source of the power of the clerk of works to obstruct the contractor under the old R.I.B.A. contract is, however, a little obscure. It certainly does not spring from the General Conditions of the contract, because these Conditions specifically provide that the clerk of works shall be considered to act solely as an inspector under the architect; and, therefore, in order to find out what his powers are, one must look at the general position of the architect under the contract. Here, again, there is no expressed or implied power under the R.I.B.A. contract that the architect may dictate this method and that method to the contractor, but it is observed that under the Arbitration Clause certain matters of wide importance are expressly excluded from arbitration and left to the sole arbitration of the architect.

Now, where, as in a contract of this kind, the architect is invested with powers, which, if he be unreasonable, he can arbitrarily exercise to the prejudice of the contractor, there is also a power, or at least a tendency, in the architect to assume other functions of direction which are in no wise prescribed in the contract. Thus, if the architect has, as in the R.I.B.A. form, absolute power to condemn materials or workmanship as unsatisfactory, without any recourse by the contractor to arbitration if he deems the architect's decision unreasonable, such power at once, in the hands of an unsatisfactory architect, gives him a moral force with which he can influence the contractor to do anything which he (the architect) desires in connection with the contract, and he is thus invested with a dangerous weapon of persuasion. The mantle of the architect in this respect may very well fall on the clerk of works, who is the architect's inspector, and may thus secure a power of direction as to the manner in which the works are to be carried out which was never contemplated in the contract. When, therefore, we speak of the powers of the architect and clerk of works under the old forms of contract we refer to the general influence which they can bring to bear upon the contractor to carry out their wishes in regard to all sorts of matters by reason of the powers of the architect in regard to quite specific matters, and accordingly, as will be explained hereafter under the chapter dealing with arbitration, the contractors contend that all questions, without exception, of dispute arising between the architects and themselves should, if the contractor wishes it, be referred to arbitration, and if this is conceded by the architect, then with it the power of the architect and clerk of works on the works will disappear.

Now here is, indeed, a serious bone of contention between architects and contractors, yet there seems even in this case to be grounds for very considerable compromise. As the contractor's interest in the contract is primarily a financial one, and as the interests represented by the architect and clerk of works are primarily professional, it is, on the one hand, only right that on questions affecting payment to the contractor he should have, as all other commercial men, access to an independent arbitrator in case of a dispute, and, on the other hand, that the architect, by himself or through his clerk of works, should, if he desires, have the work carried out in a manner satisfactory to himself. It would appear, therefore, that the contractor should, without question, do what the architect tells him, but, should the architect tell him to do anything in a way more expensive than the manner which he intended to employ, the extra payment should be reimbursed to the contractor if his own method, to the satisfaction of the arbitrator, is proved to be a reasonable and proper one.

None of the new contracts under review specifically modify the position of the clerk of works except the proposed National Building Code, but the Ministry of Health Housing Contract does abolish all final arbitrary powers of the architect, and this itself detracts from the clerk of works' powers. The National Building Code makes several new provisions in regard to the clerk of works. It is provided in the Regulations that if the employer intends to appoint a clerk of works, either directly or through his architect, it shall be so stated in the bill of quantities, and that the name of the clerk of works shall be given therein, and in Clause 8 of the Conditions it states that unless the name of the clerk of works has been supplied to the contractor prior to the tender, no person shall be appointed to that position to whom the contractor takes reasonable exception.

Clause 8 of the Code also specifically provides that the clerk of works shall not interfere with the contractor's methods and conduct of the works, and that if the contractor, during the progress of the works, has reason to consider the conduct of the clerk of works to be harsh and unreasonable he may bring the matter before the arbitrator with a view to the clerk of works being replaced.

As explained above, all these matters appear to be of slight importance provided the contractors succeed, as they have succeeded under the Ministry of Health Housing Contract, in abolishing the final arbitrary powers of the architect, because in such a case the contractor will be entitled to remunerative compensation in case the architect or clerk of works requires anything which the arbitrator considers unreasonable and more expensive than the methods proposed by the contractor. It is quite clear, on the other hand, that it should never be incumbent upon the employer to appoint a clerk of works before estimates are obtained, and if the powers of the clerk of works in regard to matters affecting the financial position of the contractor are curtailed, there can be no possible reason why the personality of the clerk of works should affect the tender sum.

Cost-plus-profit Contract Fraud.

At the Montgomeryshire Quarter Sessions at Welshpool last week a building contractor surrendered to bail and pleaded not guilty to a charge of obtaining divers sums, totalling £180, from the Montgomery County Council by false pretences. For the prosecution, it was said defendant entered into building contracts with the Council, under which he was to be reimbursed his expenses for wages and materials, and to receive 10 per cent. profit on the estimated cost. It was alleged he claimed £87 for the wages of a fictitious workman and sums for other men not actually paid them.

Defendant said he never read the contract he signed. He believed he could charge a profit on workmen's wages, and understood from another building contractor that he could charge his own working time in an assumed name. He was found guilty, and fined £150 and ordered to pay the costs of the prosecution.

REPORT OF THE SELECT COMMITTEE ON BUSINESS PREMISES.

THE Report of the Select Committee appointed to inquire into the position of leaseholders and tenants of business premises has recently been issued. In the first place the Committee finds that in a substantial number of cases tenants have been compelled to submit to what appears to be an unconscionable increase in rent in order to retain possession of their business premises, and in a number of cases they have been dispossessed of business premises without being given any option to retain them; but it must be noted that the Committee also finds that the great majority of landlords do not appear to have acted harshly towards their tenants, and that the grievances above referred to are confined to comparatively small districts mainly in the central quarters of large towns. Although the Committee finds the above facts, and states that, on the whole, the owners of business premises cannot be said to exact an excessive return for the capital invested by them in such property, yet it finds that the grievances of tenants are too general and too often combined with loss and displacement of business to exclude all idea of Government action. This rather illustrates the very modern tendency to legislate generally in order to meet particular and limited grievances.

THE INCREASE OF RENT ACT, 1920.—The Committee considered the operation of the Increase of Rent Act, but came to the conclusion that a mere extension or amendment of that measure would not solve the difficulties brought to its notice. One of the reasons given for this finding is that in the case of business premises rent does not by itself afford a measure of the need for protection, nor of the value of the business transacted on the premises. There are other reasons, however, given in this Report, which really are a valuable criticism of the working of the Act in its particular sphere, notably as regards sub-tenants, and which deserve attention.

BUILDING AND INVESTMENT.—The Report dwells on the importance of not discouraging the investment of capital in the reconstruction and erection of buildings, the solution of the problem of providing sufficient accommodation being "reconstruction" in the City and in the centre of large towns, and the building of premises in the suburban areas and provincial towns.

CONCLUSIONS.—The Committee, in drawing its conclusions, states that there is no question that building operations have been deterred by the Rent Restriction Acts, and that such must be the effect of every measure which operates to deprive an owner from reaping the full economic benefits accruing from his property, and the true remedy lies in increasing supply (*a*) by building new business premises on any available sites in business areas; (*b*) by reconstruction on larger lines providing increased accommodation; and (*c*) by developing new sites upon areas adjacent to business districts, but now occupied by decayed or undeveloped semi-residential areas.

The recommendations are, therefore, intended not to deter the provision of increased accommodation, but merely to give tenants "time to turn round," and the Committee claims that if its recommendations are accepted there will be little risk of tenants being dispossessed without any chance of finding other accommodation or of their being subjected to extortionate demands, whilst landlords will enjoy much more freedom than under the provisions of the Increase of Rent Act. The scheme put forward is of a temporary character, because the ratio between supply and demand will become in due time more normal. It is also considered desirable that any temporary legislation should expire at the same time as the Increase of Rent Act, as then the whole law of landlord and tenant can be reviewed as one question; the Committee suggests that a small committee of experts should be appointed this to consider the whole question.

THE RECOMMENDATIONS.—The Committee recommends that questions in dispute should, when possible, be settled by arbitration, failing which the Tribunal might consist either of the county court judge, or of one of a panel of arbitrators to be appointed by him, after conferring with any local branches of the Law Society and Surveyors' Institution.

Within a period of two years—*i.e.*, to June 24, 1923—failing mutual agreement, a tenant shall be empowered at some reasonable time before the expiration of his tenancy to apply to the Tribunal for the prolongation of his tenancy for a period terminating not later than June 24, 1923. The Tribunal, in deciding whether to grant the application, and what terms are just, shall have regard to all the circumstances of the case, and in particular to (*a*) the length and character of the tenancy or occupation, (*b*) the then rental value of the premises in the market, (*c*) whether the landlord wishes to terminate the tenancy in order to enter personally into possession, (*d*) the fact of notice to quit having been given in pursuance of any *bona fide* scheme of reconstruction or development, whether public or private, (*e*) the date on which the tenant has received his notice to quit, (*f*) any improvements made by the tenant which have substantially increased the permanent value of the reversion and which have not been made by him in discharge of any contractual liability, such improvements not to be regarded as a reason for increasing the rent, (*g*) any claim by the tenant that the goodwill of his business has added to the letting value of the premises, (*h*) the existence or otherwise of alternative accommodation equally suitable in all respects, and (*i*) whether the landlord has or has not previously consented or offered to renew the tenancy at a fair rental.

The Tribunal is to have power as an alternative method of relief, having also regard to the same considerations, to award compensation to an applicant in respect of his not being granted a temporary prolongation of his tenancy, except when the premises are required by the landlord to carry out an improvement scheme in the public interest. The compensation will be measured by the increase in the rental value of the premises caused by reason of any matters referred to in the preceding paragraph in respect of the period for which the tenancy might have been extended. Contracting out is to be illegal, and clauses in existing agreements which might deprive the tenant of the benefit of the proposed legislation are to be inoperative. The recommendations are not to apply to premises referred to in Section 13, subs. (2) of the Increase of Rent Act. Buildings erected after, or in course of erection on, April 2, 1919, are to be exempted.

It will be seen, although the findings of the Committee are thoroughly sound, the recommendations only result in further irksome restrictive legislation affecting premises with no limits as to rental or value. We cannot think the recommendations are satisfactory; the Tribunal, for instance, is a new departure, and if its decisions are to be effective on the lines indicated they must result in restrictions being placed on the investment of capital in business premises, and whilst tenants are being allowed to "turn round," building owners will wait to allow restrictive legislation to "blow over." We have always contended that the right method to approach rent restriction in the first instance would have been to set up rent courts to deal alone with the smaller tenement buildings. The extension of the Rent Restriction Acts should have been avoided, and the evil effects thus caused will only disappear when the legislation comes to an end.

Building Surveyors' and Inspectors' Association.

A meeting of the Building Surveyors' and Inspectors' Association is to be held at the Corn Market Hotel, Fenwick-street, Liverpool, on Saturday, January 15, at 5.30 p.m. At this meeting draft of by-laws, objects and standing orders will be submitted to the members, and there are other items for consideration.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the building trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur :—

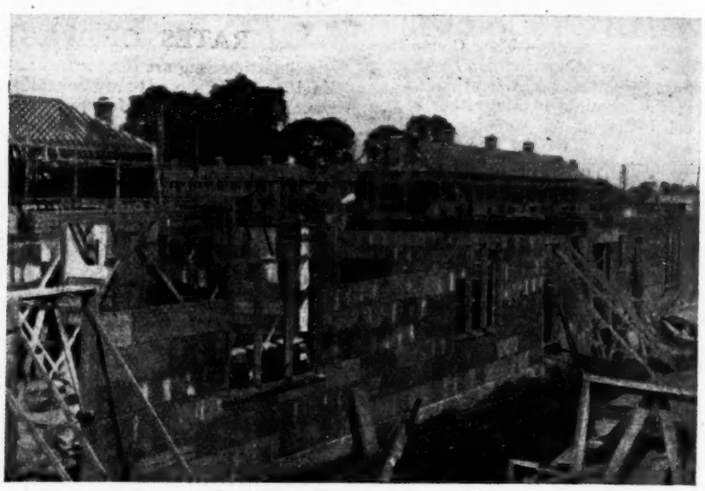
	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Bricklayers' Labourers.	Plasterers' Labourers.
Aberdare	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Accrington	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Altrincham	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Ashton-under-Lyne	2/4	2/4	2/4	2/4	2/4	2/5	2/4	2/0–2/0½	
Barnsley	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Barrow-in-Furness	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Barry	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Bath	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Bedford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Birkenhead	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0½	
Birmingham	2/4	2/4	2/4	2/4	2/4	2/5	2/4	2/1	
Bishop Auckland	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Blackburn	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Blackpool	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Bolton	2/4	2/4	2/4	2/4	2/4	2/3	2/4	2/0–2/0½	
Bournemouth	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Bradford	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Bridgwater	1/10½	1/10½	1/10½	1/10½	1/10½	1/10½	1/10½	1/7½	
Brighton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Bristol	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Burnley	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Burton-on-Trent	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
Bury	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Cambridge	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Cardiff	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Chatham	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8	
Chelmsford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Cheltenham	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Chester	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Chesterfield	2/4	2/4	2/4	2/4	2/4	2/–	2/4	2/1	
Colchester	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Coventry	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Crewe	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/10½–1/11	
Darlington	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Derby	2/1	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Doncaster	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Dudley	2/2½	2/2½	2/2½	2/2½	2/2½	1/10½	2/2½	1/11½	
Durham	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
East Glam. and Mon. Valleys	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Exeter	2/–	2/–	2/–	2/–	2/–	2/–	1/11	1/9	
Folkestone	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8	
Gloucester	2/–	2/–	2/–	2/–	2/–	2/–	1/11	1/9	
Grantham	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
Grays	2/4	2/4	2/4	2/4	2/4	2/4½	2/3	2/1	
Grimsby	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Great Yarmouth	1/1	1/11	1/11	1/11	1/11	1/11	1/11	1/8	
Guildford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Halifax	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Harrogate	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Hartlepools	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Hastings	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8	
Hereford	2/–	2/–	2/–	2/–	2/–	2/–	1/11	1/9	
Huddersfield	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Hull	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Ipswich	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Lancaster	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Leamington Spa	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
Leeds	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Leicester	2/4	2/4	2/4	2/4	2/4	2/4½	2/4	2/1	
Lichfield	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
Lincoln	2/4	2/4	2/4	2/4	2/4	2/–	2/4	2/1	
Liverpool	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0½	
Llanelly	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
London	2/4	2/4	2/4	2/4	—	2/4½	2/3	2/1	
Loughborough	2/4	2/4	2/4	2/4	2/4	2/4½	2/4	2/1	
Luton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Maidstone	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8	
Manchester	2/4	2/4	2/4	2/4	2/4	2/3	2/4	2/0–2/0½	
Mansfield	2/2½	2/2½	2/2½	2/2½	2/2½	2/3	2/2½	1/11½	
Merthyr Tydfil	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Middlesbrough	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Newcastle-on-Tyne	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Newport, Mon.	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Northampton	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
Norwich	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Nottingham	2/4	2/4	2/4	2/4	2/4	2/4½	2/4	2/1	
Oakham	2/1	2/1	2/–	2/1	2/1	2/–	2/1	1/10	
Oldham	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Oxford	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Plymouth	2/1	2/1	2/1	2/1	2/1	2/1	2/–	1/10	
Pontypridd	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Portsmouth	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Preston	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Reading	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Rochdale	2/4	2/4	2/4	2/4	2/4	2/5	2/4	2/0–2/0½	
Rochester	1/11	1/11	1/11	1/11	1/11	1/11	1/11	1/8	
Rugby	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
St. Albans	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/8	
St. Helen's	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Scarborough	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
Sheffield	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Shrewsbury	2/2½	2/2½	2/2½	2/2½	2/2½	1/10½	2/2½	1/11½	
Southampton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Southend-on-Sea	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	1/11½	1/9	
Southport	2/4	2/4	2/4	2/4	2/4	2/–	2/4	2/0–2/0½	
South Shields	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Stockport	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Stockton-on-Tees	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Stoke-on-Trent	2/2½	2/2½	2/2½	2/2½	2/2½	1/10½	2/2½	1/11½	
Stroud	2/–	2/–	2/–	2/–	2/–	2/–	1/11½	1/9	
Sunderland	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Swansea	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Taunton	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Torquay	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Wakefield	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Walsall	2/2½	2/2½	2/2½	2/2½	2/2½	2/3½	2/2½	1/11½	
Warrington	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
West Bromwich	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/1	
Wigan	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/0–2/0½	
Windsor	2/–	2/–	2/–	2/–	2/–	2/–	2/–	1/9	
Wolverhampton	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/10½	
Worcester	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	
York	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	2/2½	1/11½	

NEW INVENTIONS.

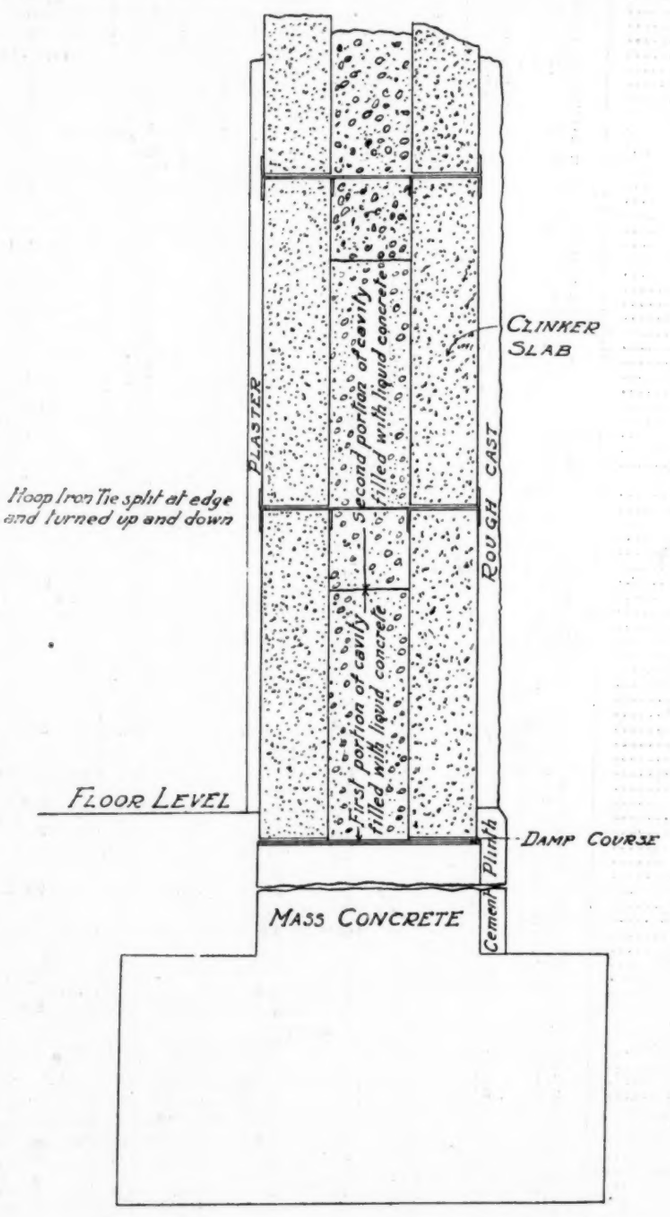
COMPOSITE CONCRETE CONSTRUCTION.

IN the composite method of concrete construction introduced by Mr. D. C. Fidler, Engineer and Surveyor to the Hayes Urban District Council, pre-cast clinker slabs are made on the site and no handling is required until the slabs are to be used; as they are laid dry no trowelling is required nor are any bedding or jointing necessary. The clinker slabs are made in moulds, and when sufficiently set are laid out to dry, skeleton wood moulding frames being used, which can be made to any size according to the dimensions it is decided to make the slabs. For general purposes the following measurements are mostly used:—Width: 2 or 2½ in.; length: 3 ft.; height: ascertain the height of room from floor to ceiling and determine height of block accordingly (*e.g.*, for an 8 ft. wall, 1 ft. 4 in. slabs are used.)

The foundations are prepared in the usual manner, and the wall from foundation level to damp-course constructed of mass concrete. On the damp-proof course the pre-cast clinker breeze blocks or slabs are laid in horizontal courses to break joint, and are set apart to form a cavity of a width according to the thickness of the wall to be produced. The slabs are secured together by wall-ties extending at intervals across the cavity and secured to the opposite slabs of each course.



"Composite" Houses in course of erection at Hayes.



SECTION OF WALL . GROUND FLOOR LEVEL

"Composite" Concrete Construction.

The cavity is filled with semi-liquid concrete up to within about 4 in. from the top of the slabs as each course is laid. By this method all through joints are prevented, and the semi-liquid concrete keys the wall into one homogeneous mass. The wall ties are of hoop-iron of the same length as the breadth of the wall; the ends are split for about ¾ in. and turned up and down, and a piece of the tie about one-half the breadth and ¾ in. in length is turned down at 2½ in. from each end so as to form a clamp which ensures correct alignment and prevents bulging. Hence, these ties form a gauge for maintaining the correct thickness of the wall and prevent the slabs from spreading whilst the cavity is being filled.

To secure correct alignment temporary profiles may be erected at each corner of the building; these profiles may be constructed of two pieces of timber set at right angles to each other and supported from the ground by stays. The slabs may be set to a line drawn between the profiles, but it will probably be found preferable to use a straight edge arranged to work in a groove on the profiles and supported by intermediate standards. In areas liable to subsidence or where great strength is required the wall may be reinforced by the insertion of steel bars in the concrete filling the cavity. The exterior face of the wall can be finished with rough-cast and the interior plastered, and the exposed ends of the ties may be broken off if desired.

Joists rest on the slabs and protrude into the cavity. The slabs in the same course as the joists should be made in the same height as the joists and of a length to fit the spacing. The fireplaces and flues are constructed in a similar manner to the outside walls, being outlined with breeze slabs and filled in with concrete; a 9 in. fireclay lining is inserted and a special tie used. In this item alone it is claimed that a saving of over £5 per house can be made. The breadth of the wall is regulated by varying the breadth of the cavity between the breeze slabs.

It is claimed for this construction that it is absolutely permanent, as the liquid concrete is, to a certain extent, absorbed by the clinker slabs, thus making a homogeneous structure. The system is in the hands of the Composite Concrete Construction Co., of 51, Pall Mall, S.W. 1, who are prepared to license the system on a royalty basis, and to supply trained men to supervise the erection of houses, or to superintend the erection of the first house if desired.

The illustration shows some houses in course of erection by this method on the housing scheme of the Hayes Urban District Council, under the direction of Mr. D. C. Fidler, Engineer and Surveyor to the Council, and Mr. J. M. Wilson, resident architect.

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number. Contracts iv; Competitions iv; Public Appointments lxviii; Sales by Auction lxxii. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

BUILDING AND PAINTING.

JANUARY 14.—**Bucklow.**—HOUSES.—Erection of 25 houses ("B" type) and the construction of roads and sewers in the township of Timperley, for the R.D.C. Messrs. Halliday, Paterson & Agate, architects, 14, John Dalton-street, Manchester. Deposit £2.

JANUARY 14.—**Criccieth.**—HOUSES.—Erection of 24 houses, and for the construction of roadway, footpaths, sewers, &c., for the U.D.C. Messrs. Owen Morris Roberts & Son, architects, Bank Place, Portmadoc. Deposit, £4 4s.

JANUARY 14.—**Nottingham.**—PAINTING.—Painting and decorating the gas offices, &c., for the T.C. Gas Engineer's Office, 6, George-street, Nottingham.

JANUARY 14.—**Skipton.**—HOUSES, ROADS, AND SEWERS.—(1) Erection of 8 parlour houses and 10 scullery houses; (2) road-making and sewering. Tenders endorsed; (1) tender for Housing; (2) tender for street-making and sewering. Mr. Aldridge, Council Offices, Skipton. Deposit £1 1s.

JANUARY 14.—**Torquay.**—HOUSES.—Erection of 75 houses on the Westhill Estate, for the T.C. Mr. J. E. Knapman, Housing Clerk, Town Hall, Torquay.

JANUARY 14.—**Woodbridge.**—HOUSES.—Erection of houses in all or any of the following parishes: Alderton (6), Bawdsey (2), Bredfield (4), Bromeswell (4), Melton (10), Shottisham (2), Tuddenham (2), and Ufford (10) houses, for the Woodbridge R.D.C. Mr. G. G. Kill, Clerk, Board Room, Woodbridge. Deposit £1 1s.

JANUARY 15.—**Haverton Hill.**—POLICE STATION.—Erection of police station at Haverton Hill, for the Durham C.C. County Architect and Surveyor's Office, Shire Hall, Durham.

JANUARY 16.—**Middleton-in-Wharfedale.**—VARIOUS WORKS.—(1) Laying out of grounds (landscape gardener's work); (2) conversion of Army huts into workshop, stores, and nurses' quarters. Trades—Bricklayer, carpenter, plumber and painter. (3) Construction of macadamised roads and asphalted paths; (4) composite flooring, at Middleton-in-Wharfedale Sanatorium, for the West Riding C.C. West Riding Architect, County Hall Wakefield.

JANUARY 17.—**Carlisle.**—PAINTING, &C.—Painting and decorating the Master's quarters at Nurses' Home, and supplying and fixing six new washing troughs in laundry, &c., for the Board of Guardians. Mr. George Armstrong, architect, 24, Bank-street, Carlisle.

JANUARY 17.—**Carnarvon.**—HOUSES.—Erection of 100 houses at Caehampton, for the T.C. Mr. Rowland Lloyd Jones, architect, 14, Market-street, Carnarvon. Deposit, £2 2s.

JANUARY 17.—**Lydd.**—HOUSES.—Erection of three pairs of houses, for the T.C. Mr. Edwin A. Jackson, architect, Ashford, Kent.

JANUARY 17.—**Northfleet.**—HOUSES.—Erection of 124 houses, for the U.D.C. Mr. G. E. Clay, architect, Crescent House, Gravesend. Deposit, £2 2s.

JANUARY 17.—**West Ham.**—ALTERATIONS AND ADDITIONS.—Alterations and additions to the Fyfield Industrial School, near Ongar, Essex, for the County Borough of West Ham. Mr. John H. Jacques, Architect to the Education Committee, 2, Fen Court, Penchurch-street, E.C 3. Deposit, £5.

JANUARY 18.—**Tottenham.**—Diversion, &c., of Stonebridge Watercourse through Goods Yard, Midland Rly. at South Tottenham and construction of concrete culvert, including manholes, &c., and lowering of existing invert of same stream under Midland and Great Eastern Rlys. for Tottenham U.D.C. Mr. Reginald C. Graves, Clerk and Solicitor to the Council, Town Hall, Tottenham, N.15. Deposit £1.

JANUARY 19.—**Gateshead.**—POST OFFICE EXTENSION.—Extension of the Post Office and Telephone Exchange at Gateshead, for H.M. Commissioners of Works Director of Contracts, H.M. Office of Works, London. S.W. 1. Deposit £1 1s.

JANUARY 19.—**Glamorganshire.**—FENCING.—Taking down parapet walls of the Ynis-y-Bont Bridge and providing and erecting iron railings in place thereof, for the C.C. Glamorgan County Hall, Cardiff.

JANUARY 19.—**Maltby.**—ADDITIONS.—Erection of cloakroom, &c., at Council School, for the West Riding E.C. West Riding Education Architect, County Hall, Wakefield.

JANUARY 20.—**Lambeth.**—REPAIRS, &C.—For repairs and redecorations to the Superintendent's and Foreman's lodges at the Lambeth Cemetery, Blackshaw-road, Tooting, for the B.C. Mr. H. E. Anderson, Borough Engineer, Lambeth Town Hall, Brixton-hill, S.W.2.

JANUARY 20.—**St. Pancras.**—ALTERATIONS.—Alterations to the coachhouse and stables, at the St. Pancras House, King's-road, N.W. 1, for the Board of Guardians. Mr. J. E. P. Hall, Clerk, Town Hall, Pancras-road, N.W.

JANUARY 21.—**Carlisle.**—HOUSES.—Erection of 254 houses on the Long Sowerby Estate, for the T.C. Mr. H. C. Marks, City Engineer, 36, Fisher-street, Carlisle. Deposit £2 2s.

*JANUARY 21.—**Stonehouse.**—(1) Concrete construction, (2) alterations and additions. (1) Construction of sewage disposal works, reservoir and foundations for buildings, principally of concrete; also excavations-road-making, drainage and cast-iron water pipes. (2) Alterations and additions to Standish House, for the Joint Committee for Tuberculosis, County of Gloucester. Mr. G. P. Milnes, A.M.Inst.C.E., 1, King-street Parade, Stroud. Deposit £1 1s. for each contract.

JANUARY 21.—**Huddersfield.**—WAREHOUSE, &C.—Erection of a three-story warehouse and offices in Springwood-street, Huddersfield, for Messrs. Jennens, Welch & Co., Ltd. Messrs. J. Berry & Sons, architects, 3, Market-place, Huddersfield.

JANUARY 21.—**Sutton.**—DEMOLITION.—The Sutton War Memorial Committee invite tenders for pulling down the buildings known as "Little Russells" and the "Croshams." Mr. J. W. Stanley Burmester, architect, 13, Queen Anne's-gate, Westminster, S.W.1. Deposit, 5s.

JANUARY 24.—**Audenshaw.**—LYCH GATE.—Erection of stone lych gate at the main entrance to the churchyard, for the War Memorial Committee. Mr. Wm. Brooks, 136, Trafalgar-street, Ashton-under-Lyne. Deposit, 5s.

JANUARY 24.—**Bingley.**—PAINTING.—For painting at the Training College, Bingley, for the West Riding E.C. West Riding Architect, County Hall, Wakefield.

JANUARY 24. — **Bolton-upon-Dearne.** — HOUSES.—Erection of 77 dwelling-houses and the roads and sewers in connection therewith, for the U.D.C. Messrs. Garside & Pennington, architects, Ropergate, Pontefract.

JANUARY 24. — **Leicester.** — HOUSES.—Erection of 100 houses, viz.: Block 1, 38 houses. Mr. Arthur J. Wood, architect, Leicester. Block 2, 32 houses. Messrs. Pick, Everard & Keay, architects, Leicester. Block 3, 30 houses. Messrs. S. Harrison & Sons, architects, Leicester. Deposit £3 3s. per Block.

*JANUARY 24.—**Stroud.**—HOUSES.—Erection of 46 houses in pairs on the Folly-lane site, Stroud, for Stroud U.D.C. Mr. A. Murray-Smith, Architect, Town Hall, Stroud, Glos.

JANUARY 25. — **Bridlington.** — ALTERATIONS.—For additions at the Police Station, for the East Riding C.C. County Architect, County Hall, Beverley. Deposit £1 1s.

JANUARY 25.—**France.**—HEADSTONES.—The Imperial War Graves Commission invite tenders for a total supply of 7,200 headstones. The Secretary, Works Branch, Imperial War Graves Commission, 82, Baker-street, London, W. 1.

*JANUARY 26.—**Kingsbury Green.**—HOUSES.—Erection and completion of 56 houses at Kingsbury-road and Buck-lane housing scheme site, near Kingsbury Green, N.W.9, for the Kingsbury U.D.C. Mr. R. C. N. Newport, Surveyor to the Council, Council Offices, Kingsbury-road, The Hyde, N.W.9. Deposit £3 3s.

JANUARY 26.—**Queensbury.**—HOUSES.—Erection of 30 houses, for the U.D.C. Mr. Herbert F. Sharpe, architect, Old Bank-chambers, Great Horton.

JANUARY 27.—**Carmarthen.**—HOUSES.—Erection of houses at Llanarthney Parish (14), Llanarthney Parish (14), St. Clears Parish (8), St. Ishmael Parish (2), for the R.D.C. Mr. David Thomas, architect, Quay-street, Ammanford. Deposit £2 2s.

JANUARY 27. — **Dorchester.** — ALTERATIONS.—For altering the east block at the R.H.A. Barracks into a large drill hall and administrative block for the 4th Battalion Headquarters; the provision of Serjeant-Instructor's quarters; and other work, for the Dorset Territorial Force Association. Mr. F. T. Maltby, 57, High West-street, Dorchester. Deposit £3 3s.

*JANUARY 27.—**London, E.1.**—FLOORING.—Renovation of flooring of Mercy and Honour Wards at the Infirmary, Parish of St. George-in-the-East, Raine-street, Old Gravel-lane, E.1.

JANUARY 27.—**Southwick.**—HOUSES.—Erection of 28 houses, for the U.D.C. Mr. G. W. Warr, Architect, Town Hall, Southwick, Sussex. Deposit, £2 2s.

*JANUARY 28.—**Green Heath, Hednesford.**—BUNGALOWS.—Erection of 50 bungalows at Green Heath, Hednesford, for Cannock U.D.C. S. Harrison, architect, Council Offices, Cannock. Deposit £1 1s.

*JANUARY 28.—**London, W.**—BUILDING AND PAINTING.—Certain works and repairs at Nos. 1A, 2, 3 and 4, Northumberland-street, W., for the Guardians of the Parish of St. Marylebone. Mr. G. Leslie Head, A.R.I.B.A., 40, Baker-street, W. Deposit £1 Treasury Note.

*JANUARY 29.—**Abergavenny.**—HOUSES.—Erection of 10 houses for the R.D.C., being a section of their housing scheme. Messrs. Francis & Prichard, architects, 16, Monk-street, Abergavenny. Deposit £2 2s

JANUARY 31.—**Millisle.**—HALL.—Erection of a Masonic Hall at Millisle. Mr. Chas. A. Aickin, architect, 20, Rosemary-street, Belfast.

*JANUARY 31.—**Stow-on-the-Wold.**—HOUSES.—Erection of 25 houses, for the U.D.C. Messrs. Shatters, Smithson & Rainger, 17, Regent-street, Cheltenham.

*FEBRUARY 1.—**Epsom.**—EXTENSION.—Extension of Pensions Training Centre, Woodcote Park, Epsom. The Secretary, H.M. Office of Works, Storey's-gate, Westminster, S.W.1. Deposit, £1 1s.

FEBRUARY 7.—**Knaresborough.**—HOUSES.—Erection of 10 houses at Pannal and 12 houses at Hampsthwaite, for the R.D.C. Messrs. W. Hill & Son, architects, 38, Albion-street, Leeds.

FEBRUARY 8.—**Various Towns.**—PAINTING.—The Lancashire and Yorkshire Railways invite tenders for painting at Section of Line (1) Southport Goods and Passenger Stations, &c.; (2) Liverpool Exchange Station and Engine Sheds at Sandhills and Ormskirk; (3) North Mersey Branch, Fazakerley to Preston-road, Kirkdale to Aintree, &c.; (4) Lostock Junction to Kirkby, Crow Nest Junction to Horwich Fork Junction, and Hindley and Pemberton Loop Line; (5) Blackburn to Hillfield; (6) Blackburn to Colne, via North Lancashire Loop (7) Cherry Tree to Chorley; (8) Bolton Goods and Passenger Stations; (9) Stubbins to Bacup and Bacup Engine Shed; (10) Cheetham Hill Junction to Radcliffe, &c.; (11) Oldham Road Branch and Goods Station; (12) Newton Heath Engine Shed and Lodging-house; (13) Wigan and Lower Darwen Engine Sheds; (14) Agecroft and Bury Engine Sheds, Clifton Junction Power-house, and Radcliffe Sub-station; (15) Low Moor to Mirfield, &c.; (16) Mirfield to Wakefield, &c.; (17) Wakefield to Knottingley, etc. Engineer's Office, Hunt's Bank, Manchester.

FEBRUARY 14.—**Palestine, &c.**—CEMETERY CONSTRUCTION.—The Imperial War Graves Commission invite tenders for the construction of (*a*) four cemeteries in Palestine, (*b*) 26 cemeteries at Anzac (Gallipoli), (*c*) 14 cemeteries in Macedonia. Director of Works, Imperial War Graves Commission, 33–36, Baker-street, W. Deposit £10.

NO DATE.—**Bradford.**—PAINTING.—For the outside and inside painting and cleaning of the casual wards, Park-lane, for the Board of Guardians. Mr. Fred Holland, architect, 22, Manor-row, Bradford.

NO DATE.—**Hemsworth.**—HOUSES.—Erection of 94 and 68 houses and the making of roads and construction of sewers in connection with their housing schemes, for the R.D.C. Messrs. W. H. Wagstaff & Sons, architects, 57, Salter-gate, Chesterfield. Deposit, £1 1s.

NO DATE.—**Hull.**—WAREHOUSE.—Erection of a warehouse, Bankside, Hull, for Messrs. Blundell, Spence & Co., Ltd. Messrs. B. S. Jacobs & Snowden, architects, Land of Green Ginger, Hull.

NO DATE.—**Rotherham.**—HOUSE, &C.—Erection of a house and shop at Thurcroft, near Rotherham. Mr. Robert Bloor, 157, Castleford-road, Normanton.

FURNITURE, MATERIALS, etc.

JANUARY 14.—**Bexhill.**—MACADAM.—Supply of 1,100 tons of limestone, ragstone, or other approved material, to the T.C. Mr. George Ball, Borough Surveyor, Town Hall, Bexhill.

JANUARY 14.—**Bexhill.**—TAR.—Supply of distilled tar, tarvia, or other compounds, for use in tar spraying roads, for the T.C. Mr. George Ball, Borough Surveyor, Town Hall, Bexhill.

JANUARY 15.—**Hatfield.**—MATERIALS.—Supply of broken granite, slag, and tar-macadam, to the Herts C.C. Mr. A. Ernest Prescott, County Surveyor, County Surveyor's Office, Hatfield.

JANUARY 15.—**Grantham.**—ROAD MATERIALS.—Supply to the T.C. of granite, slag and tar-macadam. Mr. G. A. Ballard, Borough Surveyor, Guildhall Grantham.

JANUARY 15.—**Plymouth.**—MATERIALS.—Supply of materials for the public services, for the T.C. Mr. T. P. Frank, Borough Engineer, Plymouth.

JANUARY 17.—**Eccles.**—GYMNASTIC APPLIANCES.—Erection of gymnastic appliances at Eccles, Patricroft, and Winton Recreation Grounds, for the T.C. Mr. T. S. Picton, Borough Surveyor, Town Hall, Eccles.

JANUARY 18. — **London.** — JOINERY. — Supply of joinery in connection with various housing schemes. Director of Contracts, H.M. Office of Works, Storey's-gate, S.W.1.

JANUARY 18.—**Gosport.**—TAR.—Supply of 10,000 to 20,000 gallons of tar for road surface treatment. Mr. H. Frost, Surveyor, Gosport.

JANUARY 19.—**Manchester.**—TIMBER.—Supply to the Board of Guardians of spruce deals, red deals, pine, T. and G. boards, shelving, &c. Mr. Hargreaves, superintendent of Works, Union Offices, All Saints', Manchester.

JANUARY 20.—**Lincoln.**—MATERIALS.—Supply of road stone and materials to the Lindsey C.C. Mr. A. G. Bradshaw, County Surveyor, Newland House, Lincoln.

JANUARY 24. — **Hampstead.** — WORKS, &C. — Works, materials, or services for the year, from April 1 next. Mr. Arthur P. Johnson, Town Clerk, Town Hall, Haverstock Hill, N.W. 3.

JANUARY 24.—**Warrington.**—PIPES.—For sewer pipes, bends, junctions, &c., for the T.C. Mr. Andrew M. Ker, Borough Engineer, Warrington.

JANUARY 25.—**France and Belgium.**—HEADSTONES.—Supply of 7,200 headstones, packed and delivered f.o.r., to be divided into a number of contracts none of which shall be for less than 100 headstones. Tenders marked "Headstone Contract 5079.E, The Secretary, Works Branch, Imperial War Graves Commission, 82, Baker-street, London, W. 1.

JANUARY 25.—**Gloucester.**—MATERIALS.—Supply of stone for use on main roads, for the C.C. County Surveyor, Shire Hall, Gloucester.

JANUARY 26. — **Chelsea.** — MISCELLANEOUS ARTICLES, &C.—Miscellaneous articles and works for the Metropolitan Borough of Chelsea.

JANUARY 31.—**Chelmsford.**—MATERIALS.—Supply of road materials to the Essex C.C. Mr. P. J. Sheldon, County Surveyor, Chelmsford.

*JANUARY 31.—**Hendon.**—MATERIALS.—Supply of materials, &c., for one year from April 1, 1921, for the U.D.C. Mr. A. O. Knight, A.M.I.C.E., Engineer and Surveyor, Town Hall, Hendon, N.W.4.

JANUARY 31.—**Jharia.**—PIPES, &C.—Supply of cast-iron pipes, up to 21 in. internal diameter, together with sluice stop valves, &c. Messrs. Sir Alex. Binnie, Son & Deacon, 30, Buckingham Gate, Victoria-street, Westminster, S.W.1. Deposit £6.

JANUARY 31.—**Johannesburg.**—SANITARY FITTINGS.—Supply of sanitary fittings for a public convenience, Union Ground, Johannesburg. Messrs. E. W. Caring & Co., St. Dunstan's-buildings, St. Dunstan's-hill, London, E.C. 3. Deposit, £1 1s.

FEBRUARY 3.—**Halifax.**—STORES.—Supply of general stores to the Electricity Dept. of the T.C. Borough Electrical Engineer, Foundry-street, Halifax.

FEBRUARY 3.—**Lincoln.**—TAR, &C.—Supply of tar and tar spraying, for the C.C. Mr. Arthur G. Bradshaw, County Surveyor, Newland House, Lincoln.

FEBRUARY 7.—**Camberwell.**—MATERIALS.—Supply of materials required in the service of the B.C. Mr. F. J. Slater, Borough Engineer, Town Hall, Camberwell, S.E.

FEBRUARY 23.—**Madras.**—PIPES, &C.—Supply of stoneware pipes and specials, varying from 4 in. to 18 in. diam., and aggregating a total length of about 76 miles, for the Madras Corporation. Messrs. James Mansergh & Sons, Agents to the Corporation, 5, Victoria-street, Westminster, S.W.1. Charge 5s.

ENGINEERING, IRON AND STEEL.

JANUARY 17.—**Hayes.**—SEWAGE EJECTORS.—Provision and construction of an ejector chamber in cast iron tubbing, and for the provision and installation of two 50-gallon automatic alternating sewage ejectors, for the U.D.C. Mr. D. C. Fidler, Engineer, Council Offices, Hayes, Middlesex.

JANUARY 17.—**Poole.**—BOREHOLES.—Sinking of two 21 in. diameter boreholes at the Poole Waterworks Pumping Station, Corfe Mullen. Mr. A. P. I. Cotterell, engineer, 17, Old Queen-street, Westminster, S.W.1. Deposit £5 5s.

JANUARY 20.—**Belfast.**—GASHOLDER.—Construction of a gasholder tank, 22 ft. 6 in. diameter by 37 ft. deep, for the T.C. Mr. J. D. Smith, engineer, Gas Works, Belfast. Deposit £3 3s.

JANUARY 20.—**Fife.**—VARIOUS WORKS.—At Park-road School, Rosyth—electric lighting, heating work, and painter work: Crossgates New School, heating work, for the Fife Education Committee. Mr. R. H. Motion, architect, Union Bank-chambers, Dunfermline. Deposit, £1 1s.

JANUARY 24.—**Johannesburg.**—STEEL FRAME BUILDING.—Supply to South African Railways Headquarter Offices, Johannesburg, of steel framed building forming extension to saw mill, Salt River Workshops. High Commissioner for the Union of South Africa, 32, Victoria-street, London, S.W. 1.

JANUARY 24.—**Warrington.**—LAUNDRY AND COOKING APPARATUS.—Supplying and fixing laundry and cooking apparatus at the new Sanatorium at Hefferston-grange, Weaverham, for the T.C. Mr. Andrew M. Ker Borough Engineer, Warrington.

JANUARY 25.—**Chester-le-Street.**—ELECTRIC INSTALLATION.—For wiring, lighting of 512 houses, Bullion-lane, for the U.D.C. Mr. G. H. Armstrong, Chester-le-Street. Deposit, £1 1s.

JANUARY 25.—**Lambeth.**—HEATING INSTALLATION.—Installation of heating apparatus, &c., at the Infirmary and Workhouse, Kennington, for the Board of Guardians. Mr. J. L. Goldspink, Clerk, Guardians' Offices, Brook-street, Kennington-road, S.E.

✱JANUARY 25.—**Surrey.**—CONCRETE IMPROVEMENT.—Concrete improvement of the River Graveney for a length of about two miles, partly in concrete open channel and partly concrete closed culvert with brick or reinforced concrete roof of varying size, averaging 10 ft. × 8 ft., with special works at the Railway Bridge, Collier's Wood, and at the outlet into the River Wandle. Chief Engineer, L.C.C. County Hall, Spring Gardens, S.W. Deposit, £5.

JANUARY 25.—**Taunton.**—BRIDGE.—For erection of ferro-concrete bridge over the River Teor, for the T.C. Mr. I. F. Shellard, Borough Engineer, Taunton.

JANUARY 26.—**Belfast.**—BARRIER, &C.—Construction and erection of a barrier with gates at the Queen's Quay, County Down, for the Belfast Harbour Commissioners. Mr. T. S. Gilbert, engineer, Harbour Office, Belfast.

✱JANUARY 28.—**Notting Hill, W.**—REPAIRS TO WELL PUMP.—Adjustment and Repairs to the deep well pump, including the withdrawal of rods, buckets, foot valves, &c., replacing and leaving same in working order, at the Infirmary, Rackham-street, Notting Hill, W. Steward's Office of the Infirmary.

FEBRUARY 7.—**Pietermaritzburg.**—STEEL FRAMED BUILDING.—Supply of steel framed building for extension to locomotive and machine shops, for the Union of South Africa. High Commissioner for South Africa, 32, Victoria-street, S.W.

MARCH 4.—**Bombay.**—REFUSE DESTRUCTOR.—Manufacture, erection and equipment of a refuse destructor within the City for the incineration of 200 tons of refuse per day. Sir John Wolfe Barry, Lyster & Partners, Dartmouth House, 2, Queen Anne's Gate, Westminster, S.W.1. Charge, 5s.

ROAD, SANITARY, AND WATER WORKS.

JANUARY 17.—**East Barnet.**—ROADS.—Making up Marne-avenue and Falkland-avenue, for the U.D.C. Mr. H. York, Surveyor, Council Offices, Station-road, New Barnet.

JANUARY 17.—**Romsey.**—ROADS.—For paving, kerbing, and chanelling work, for the T.C. Borough Surveyor, Town Hall, Romsey.

JANUARY 17.—**Romsey.**—STEAM ROLLING.—For steam rolling, for the T.C. Borough Surveyor, Town Hall, Romsey.

JANUARY 18.—**Buxton.**—STREET WORKS.—Various street works, including kerbing, flagging, &c., and 2,270 supl. yards of carriageway, for the T.C. Mr. F. Langley, Borough Engineer, Town Hall, Buxton. Deposit £3 3s.

JANUARY 19.—**Chadderton.**—CULVERT.—Construction of a storm water relief culvert and other works, for the U.D.C. Messrs. James Diggle & Sons, 14, Brown-street, Manchester.

JANUARY 19.—**Rochdale.**—ROADS.—Construction of roads and sewers at Turf Hill site, for the T.C. Borough Surveyor, Town Hall, Rochdale.

JANUARY 20.—**Lambeth.**—REFUSE REMOVAL.—For disposal of house refuse, &c., for the B.C. Mr. H. A. Anderson, Borough Engineer, Lambeth Town Hall, Brixton Hill, S.W.

✱JANUARY 21.—**Eton.**—ROADS, SEWERS, HOUSES.—Roads, sewers and erection of 50 houses in the parish of Gerrard's Cross, for the Eton R.D.C. Mr. Arthur Gladwell, Director of Housing, 160, High-street, Slough.

JANUARY 23.—**Burry Port.**—SEWERAGE.—Construction of about 300 yards of 9 in. stone-ware pipe-sewer. Mr. A. P. I. Cotterell, engineer, 17, Old Queen-street, Westminster, S.W. 1. Deposit £2 2s.

JANUARY 24.—**London, E.C.**—PIPE LAYING, &C.—Pipe laying, repairs and alterations to mains, &c., for a period of twelve months commencing February 14, 1921. Mr. A. B. Pilling, Clerk to the Board, Offices of the Board, New River Head, 173, Rosebery-avenue, EC. 1.

JANUARY 25.—**Portishead.**—SEWER.—For laying a nine-inch stone-wall socketed pipesewer, &c., in Burlington-road, for the U.D.C. Mr. J. C. Glyde, Clerk, Council Offices, Burlington-place, Portishead.

JANUARY 29.—**Finchley.**—SANITARY.—(1) House and trade refuse—collection and removal of: (2) general cartage, for the U.D.C. Mr. E. H. Lister, Clerk, Council Offices, Finchley, N.3.

JANUARY 31.—**Farnham.**—SEWERS.—Construction of sewers and manholes in the Hale Ward, for the U.D.C. Surveyor, Council Offices, South-street, Farnham. Deposit £2 2s.

✱JANUARY 31.—**Hendon.**—SEWERS.—Construction of about 117 lin. yards 9 in. pipe sewer, with manholes in Colin Deep-lane, Hendon. Mr. A. O. Knight, A.M.I.C.E., Engineers to the Council, Town Hall, Hendon, N.W.4. Deposit £2.

FEBRUARY 2.—**East Ashford.**—SCAVENGING.—For the scavenging of Boughton Aluph, for one year, for the R.D.C. Mr. T. H. Wilde, Surveyor, Wilesborough.

FEBRUARY 5.—**Tadcaster.**—SEWAGE DISPOSAL.—Execution of a scheme of main sewerage and sewage disposal for Kippax, for the R.D.C. Messrs. D. Balfour & Son, Civil Engineers, 3, St. Nicholas Buildings, Newcastle-on-Tyne. Deposit £5.

Auction Sales, Tenders, etc.

JANUARY 12, 13 and 14.—**Redcombe.**—Messrs Bruton, Knowles & Co. will sell, at Redcombe Aerodrome (12 miles from Cheltenham), 110 buildings, corrugated iron and wood sectional buildings, and other miscellaneous effects. Auctioneers, Albion Chambers, Gloucester.

JANUARY 18.—**Catford, S.E.**—Messrs. Norfolk & Prior will sell, without reserve, by order of the Disposal Board, at Bromley-road Depot, Catford, S.E.6, logging plant and machinery, electric power plant, miscellaneous plant, new tools and general stores. Auctioneers, 4, Station Buildings, Catford Bridge, S.E.6.

JANUARY 18.—**Horley, Sussex.**—Messrs. Joseph Hibbard & Sons will sell by direction of the Disposal Board, at the Timber Depot, Salfords, near Horley, stock of English timber, comprising 30,000 ft. cube English oak and 1,000 ft. cube aeroplane ash and other miscellaneous assortments. Auctioneers, Newington-green, Islington, London, N. 1.

JANUARY 18 AND 19.—**South Wales.**—Messrs. Bowling Bros. will sell by direction of the Disposal Board, at Bush Camp, Pembroke Dock, South Wales, timber huts, corrugated iron buildings and miscellaneous fittings and appliances. Auctioneers, 17, Commercial-row, Pembroke Dock.

JANUARY 19.—**London, E.C.**—Messrs. Tyser, Greenwood & Co. will sell, at Winchester House, E.C., freehold building estate, known as Chiswick Park Farm. Auctioneers, 360, High-road, Chiswick, W. 4.

✱JANUARY 19.—**Surrey.**—Messrs. Joseph Hibbard & Sons will include in their sale at Salfords Mill the following items of plant and machinery:—3 ft. gauge steam loco., 1 3 ft. gauge steam loco., and quantity of 25 lb. light rail and 3 ft. gauge bogies. On view, Board of Trade Timber Depot, Eartham, near Chichester.

✱JANUARY 20.—**Plumstead Common, S.E.**—Messrs. J. T. Skelding & Co. will sell by direction of the Disposal Board, at Headquarters A.A. Station, Plumstead Common, S.E., 45 Army huts and camp buildings; also at Pond-road, Blackheath, S.E., sectional and non-sectional timber huts and officers' quarters and other miscellaneous building materials. Auctioneers, 48, Gresham-street, Guildhall, E.C.

✱JANUARY 25.—**London, S.W.**—Messrs. H. W. Smith will sell under authority of the Committee, W. J. Peach & Co., at No. 8, Elvaston-mews, Queen's Gate-place, S.W., South Kensington, the stock-in-trade and plant of a West-end builder, decorator and electrical engineer. Auctioneers, 6, Great James-street, W.C.1.

JANUARY 26.—**Willesden, N.W.**—Messrs. Leopold Farmer & Sons will sell, by Order of the Liquidator, at 25, Hythe-road, Willesden Junction, woodworking plant and machinery, stock, &c.; also January 25, at Nos. 5 and 25, Hythe-road, Willesden, sale of woodworking and engineering plant and machinery. Auctioneers, 46, Gresham-street, Bank, E.C., and Kilburn, N.W.

✱JANUARY 27.—**Lincoln.**—Mr. Geo. L. Tinsley will sell at Swanpool Garden City, Lincoln, huts, timber, bricks, 150 new electric cookers, and other requisites. Auctioneers, Silver-street, Lincoln.

✱JANUARY 31.—**Chiswick.**—STORES.—Tendering for the execution of work and supply of stores (separately) for twelve months commencing April 1, 1921. Mr. Edward Willis, A.M.I.C.E., Engineer and Surveyor, Town Hall, Chiswick, W4.

FEBRUARY 1.—**Prestatyn, North Wales.**—Messrs. Knight, Frank & Rutley will sell, at their Hanover-square Estate Room, a building and agricultural estate extending to above 121 acres. Auctioneers 20, Hanover-square, London, W.1.

✱FEBRUARY 1 AND 2.—**Islington, N.**—Messrs. Joseph Hibbard & Sons will sell, without reserve, by order of W. Irwin, Esq., who is retiring from business, at Spencer Works," No. 303, Essex-road, N., builders' plant and stock. Auctioneers, Newington Green, Islington, N.

✱FEBRUARY 7.—**Sandwich, Kent.**—Messrs. Henry Butcher & Co., have received instructions from Messrs. Rownson, Drew & Clydesdale, Ltd., to sell, without reserve, on the premises of the Government Dept., Richborough, enormous quantities of valuable new and partly-used stores, oils, paints, colours, &c. Auctioneers, 63 and 64, Chancery-lane, London, W.C. 2.

FEBRUARY 3.—**Belgravia, S.W.**—Messrs. Knight, Frank & Rutley will sell at their Hanover-square Estate Room, the freehold site situated in D'Oyley-street, Sloane-terrace, S.W. Auctioneers, 20, Hanover-square, London, W.1.

FEBRUARY 15.—**Surrey.**—Messrs. Knight, Frank & Rutley will sell in conjunction with Messrs. King & Everill, freehold modern residence known as "Oaklands" (a few minutes from Kenley Station, S.E. & C. Rly.); also residences, cottages, and "Garston Hall," each having considerable land. Auctioneers, 20, Hanover-square, W.1.

Competitions.

(*See Competition News, page* 60.)

Public Appointments.

JANUARY 19.—**Cardiff.**—Assistant required as soon as possible in the Technical College to assist the Head of the Department of Architecture and Civic Design. Mr. Charles Coles, B.Sc.(Lond.), Technical College, Cardiff.

JANUARY 22.—**East Ham.**—Foreman for work of sewer construction required by the County Borough of East Ham. The Borough Engineer, Town Hall East Ham, E.6

JANUARY 22.—**Leicester.**—Assistant required in the City Surveyor's General Routine Department. Mr. E. George Mawbey, City Engineer and Surveyor, City of Leicester.

✱JANUARY 22.—**Middleton.**—ARCHITECTURAL ASSISTANT.—Architectural Assistant required for temporary service in the Borough Engineer's Department. Mr. J. P. Walmsley, Town Clerk, Borough of Middleton, Town Hall, Middleton.

✱JANUARY 27.—**Flintshire.**—Engineering assistant prime costing clerk, and several navvy gangers experienced in charge of gangs of workmen on road and railway work required by the County Council. Mr. Sam Evans, County Surveyor, County Offices, Mold, North Wales.

✱JANUARY 27.—**London, E.C.4.**—Shorthand Clerk and Typist (male) on the Temporary Staff of Engineer-in-Chief's Department, Metropolitan Asylums Board, Embankment, E.C. 4.

✱JANUARY 31.—**Llantarnam.**—Temporary Architectural Assistant required by the U.D.C. for Council's Housing Scheme. Applications endorsed "Architectural Assistant," to Mr. H. H. Haden, Clerk to the Council, Council Offices, Cwmbran, Monmouth.

✱FEBRUARY 1.—**Bombay.**—Head Lumber required by the Municipality of Bombay. Messrs. John Taylor & Sons, 36, Victoria-street, London, S.W.1.

✱NO DATE.—**Devonport.**—Architectural Assistant required by the Superintending Civil Engineer, H.M. Dockyard, Devonport. Preference given to ex-Service man.

CALENDARS.

Messrs. Allen, Fairhead & Son, building contractors, of Enfield, have issued a wall calendar for 1921, containing a photograph of Temple Bar as it now appears at Theobald's Park, near Enfield.

Messrs. Troughton & Young, electrical engineers and contractors, of Park Mansions Arcade, Knightsbridge, S.W.1, have issued a wall calendar for 1921, containing a reproduction in colour of "The Road to London," by Yeend King.

We have received from Messrs. Griggs & Son, building contractors and concrete specialists, of 100, Victoria-street, S.W.1, a wall calendar for 1921 in monthly tear-off pages.

"Concrete and Constructional Engineering."

In addition to much other matter of interest to those concerned with concrete and cement, the current issue of *Concrete and Constructional Engineering* contains an illustrated description of the new concrete factory recently erected at Cork for the manufacture of Ford motor tractors. The reason given for the selection of Cork as the site for the factory is of considerable interest, and should provide much food for thought for those responsible for the policy of the trade unions in this country. The writer says:—"All concerned—including workmen—are most interested in and proud of their work. Labour here is very willing and adaptable, which in a large measure induced the company to locate in Cork."

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ASH.—Plans for alterations to the "Crooked Billet" have been passed by the Justices.

BATH.—Plans approved: Sanitary accommodation, Marlborough Tavern, Weston-road; Army hut, Weymouth-street; bungalow and garage, Wellsway; gas-producing house, &c., Aircraft Works, Twerton.

BELFAST.—Plans passed: Alteration to hall, Fitzroy Presbyterian Church; alterations to premises, Wellington-place, for the Norwich Union Fire Insurance Society, Ltd.; conversion of premises, Newtownards-road, for J. & R. Thompson, Ltd.; store, Adelaide-street, for A. Bullock; alterations to premises in Ormeau-road and Deramore-street, for S. Sterling; alterations to premises, Newtownards-road, for D. Hall; workshop, &c., Catherine-street, for W. G. Tweedie; shops and motor garage in Great Victoria-street, for Leslie Porter, Ltd.; new drainage of stores and offices, Corporation-street, for Loude & Wilson; motor house, Eglantine-avenue, for J. O'Doherty; conversion of premises, Ann Street, for O. McMahon; two houses, Bloomfield-road, for H. Croft; alterations to shop and dwelling-house, Shankill-road, for J. W. Saunders; motor house, Lisburn-road, for F. Barbour; pavilion near Bladon Drive, for the Instonians Football Club; house, Myrtlefield Park, for F. Page; motor house, Chichester-avenue, for R. Shannon; shop front, Shankill-road, for W. A. Thomas; workshop, near Raby-street, for McNeill & Fulton; six houses, Ardenlee-avenue, for H. & J. Martin, Ltd.; conversion of premises, Dublin-road, for W. Willis; addition to premises, Antrim-road, for R. N. Morrison; conversion of premises, Duncairn-gardens, for Mrs. S. Withers; motor house, Alliance-avenue, for J. Copeland; premises, May-street, for A. Dougal & Sons, Ltd.; alterations to premises, Waring-street, for the Ulster Banking Co., Ltd.; pavilion, near Glenbank-road, for the Glenbank Football Club; alterations to stores, Townsend-street, for Morton & Co.; motor house, Ravenhill-road, for the Baltic Timber and Cooperage Co.; premises, Newtownards-road and Templemore-avenue, for W. Hastings; alterations to clubrooms, Shankill-road, for J. McKibben; alterations to Orange Hall, Clifton-street; motor house in Hampton Park, for C. V. Hill; motor house in Malone Park, for B. Isaacs.

BLYTH.—The Blyth and Cuckney R.D.C. has approved a district housing scheme estimated to cost, with land, about £68,300.

BOLTON.—Plans passed: R. Gibbons, motor garage, 24, Somerset-road; T. Woods, eight houses, off New Hall-lane; T. Woods, pair houses, off New Hall-lane; Thomas Hardcastle & Sons, Ltd., pump house, Firwood Bleachworks; Bleachers' Association, Ltd., reconstruction of engineering shop, "The Oaks"; J. H. Sharman, corrugated iron shed, Back Blackburn-road; William Gornall & Son, wooden shed, Ellesmere-street; Henshall & Berry, wooden shed, Duckworth-street; F. R. Makin, house, St. George's-road; J. Rigby, wooden garage, Back Wigan-road; J. Eckersley & Son, new roof to shed, Gate-street; Parkside Motor Co., extension to garage, &c., Peabody-street; Rd. Harwood & Sons, transformer house, Darley-street; Stamford Building Co., Methodist School, Willows-lane; Magee, Marshall & Co., cinema and four lock-up shops, Bradshawgate; F. S. Hampson, cinema and cafe, Bradshawgate and Churchgate.

BOURNEMOUTH.—Plans passed: Additions, "The Little House," Nelson-road, for Mr. Robinson; garage, "Lauriston," Grand-avenue, for Mr. A. R. White; motor house, 54, Grand-avenue, for Mr. W. Douglas; store, Leslie-road, for Mr. H. Rigler; additions to roof "Desfo d" Wilfred-road, for Mrs. Elliott; house, Chessel-avenue, for Mr. A. Barnes; motor house, Newstead-road, for Mr. J. Drewitt; two houses, Malvern-road, for Mr. J. Francis; additions, 144, Holdenhurst-road, for Mrs. E. M. Croom; additions to bungalow, Watcombe-road, for the Misses E. S. & T. E. Weston; gardener's cottage, "Hengisbury," St. Catherine's road, for Mrs. Lacon Gordon; house and motor house, Heatherlea-road, for Mr. J. Drewitt; house, Southbourne Overcliffe Drive, for Mr. C. Garfitt; bungalow, Bengal-road, for Mr. W. Watton; house, Hathaway-road, for Messrs. Stacey & Scott; four houses, Oxford-avenue, for Messrs. Lawrences; house, Cromwell-road, for Messrs. Lawrences; offices and workshops, 17, Oxford-road, for Mr. W. A. J. Mitchell; house, Coronation-avenue, for Mr. Rose; store, 8, Castlemain-avenue, for Mr. Rose; house, Bloomfield-avenue, for Mr. H. C. Barnes; house, Arnewood-road, for Mr. J. Newbury; alterations to business premises, Commercial-road, for Messrs. Judges, Ltd.; house, Queen's Park-avenue, for Mr. J. Drewitt; house, corner of Rotherfield and Montague-roads, for Messrs. Lawrences; cart shed, Southcote-road, for Messrs. Kennedy's, Ltd.; garage, Fenton-road, for Mr. M. Sellick; showroom, 59, Alma-road, for Mr. F. Barnes; house, Keswick-road, for Mr. T. R. Burges; bungalow, corner of Carminster and Sutton-roads, for Mr. H. Welstead; three bungalows, Charminster-road, for Mr. H. Welstead; bungalow, corner of Charminster and Gresham-roads, for Mr. H. Welstead; bungalow, St. Alban's-avenue, for Mr. A. H. Jackson; alterations to premises, Albert-road, for the Bournemouth *Daily Echo*; additions, McGill Memorial Mission Hall, Windham-road, for Mr. G. Cotton; extension of store, 62, Irving-road, for Mr. H. Hook; house, Beechey-road, for Messrs. George & Harding; alterations, "Ridgemont Stables," Wimborne-road, for Mr. A. K. Langridge; house, Cranleigh-road, for Mrs. E. M. Brough; house, Stirling-road, for Mrs. Meggitt; house, corner of Southbourne Overcliffe Drive and Pinecliffe-avenue, for Mr. C. H. Newman; two houses, St. Alban's-crescent, for Mr. A. H. Jackson; two houses, Arnewood-road, for Mr. J. Newbury; alterations and additions to premises, corner of Christchurch and Warwick-roads, for Lloyd's Bank, Ltd.; alterations and additions to premises, 27 and 29, Old Christchurch-road, for London County Westminster and Parrs Bank, Ltd.; three houses, Heathwood-road, for Mr. S. Gidlow; house, Soberton-road, for Mr. C. V. Miller.

BRIDLINGTON.—Plans passed: Mr. E. V. King, house, James-street; Mr. J. H. Hudson, addition, Victoria Hotel, Promenade, for Mrs. Fletcher; Mr. J. R. Earnshaw, two houses, Cardigan-road, for Mr. E. Gray; Mr. J. R. Earnshaw, bungalow, James-street, for Mr. R. C. Chambers; Mr. J. R. Earnshaw, house, Trafalgar-crescent, for Mr. F. W. Martindale; Mr. J. R. Earnshaw, house, James-street, for Mr. C. H. Gray; Mr. J. R. Earnshaw, house, James-street, for Mr. T. H. Wadsworth; Mr. J. R. Earnshaw, house, James-street, for Mr. F. Spink.

COLERAINE.—The Board of Guardians has decided to carry out alterations and renovations at the Fever Hospital, at a cost of £604.

CROYDON.—The Freemasons have formed a limited liability company to erect a Masonic hall.

DARWEN.—The T.C. has approved of the erection of 41 dwelling-houses at an estimated cost of £43,000, the work to be undertaken by private building firms in the town.

ENNISKILLEN.—The U.D.C. has decided to ask for a loan of £66,000 to proceed with the first instalment of its housing scheme, being 58 houses on the Alexandra-terrace site, 50 to be three-bedroom and parlour houses and 8 four-bedroom and parlour houses.

ESSEX.—The C.C. has approved of schemes for alterations at Harold Court Sanatorium, to cost £9,900; and of alterations at Black Notley sanatorium, at a cost of £9,500.

HESTON AND ISLEWORTH.—Plans approved: Mr. H. W. Hiscock, detached house, Chapel-road, Hounslow; Speechley & Smith, alterations to buildings, Silver Hall, North-street, Isleworth: Lever Bros., Ltd., boiler house and chimney shaft, for Messrs. A. & F. Pears, Ltd., Isleworth; Mr. A. L. Lang, M.S.A., Girls' Secondary School, Gumley House Convent, Isleworth; Mr. A. C. Hodges, Lic.R.I.B.A., boiler house, for Messrs. Lowe, Clayton & Hicks, Ltd., Worton-road, Isleworth.

HALESOWEN.—The R.D.C. has assented to the Office of Works erecting 200 houses.

HIGHGATE.—The Metropolitan Water Board Bill, 1921, includes provisions for reservoirs on Highgate golf course at Southern-road, and between Grand and Woodside-avenues, Muswell-hill.

HOVE.—Plans passed by T.C.: Reid & Co., for Mr. A. Blackhurst, conversion into four flats, 1 Third Avenue; Mr. W. H. Overton, for Mr. W. B. Cook, conversion into three flats, 2, Brunswick-square; Mr. W. H. Overton, for Mrs. Brundell, conversion into two flats, 20, Sackville-road; Mr. E. Watts, for Miss A. Lascelles, conversion into flats, 33, Lansdowne-place; Mr. B. H. Dixon, conversion into flats, 5, St. Aubyns; J. Parsons & Sons, for Mr. A. W. D. Pitcher, motor garage, 41, Wilbury Villas; Bethell & Swannell for the Brighton Co-operative Society, twenty semi-detached houses, Portland-road; Burdwood & Dunt, addition, Tandridge-road, House "E," east side; Mr. A. H. Lainson, for Miss Phare, re-arrangement of accommodation, 21, Cambridge-road; Mr. A. H. Lainson, for Miss Phare, re-arrangement of accommodation, 39, Cambridge-road; Mr. C. J. Kerridge, for Mr. G. Butt, alterations, 21, Wilbury-gardens; Mr. H. Smith, for Mr. L. M. Schoenfield, conversion into flats, 2, Adelaide-crescent.

HULL.—Plans passed by T.C.: British Oil and Cake Garden Village, Ltd., outbuildings, Garden Village, Holderness-road; C. H. Boyling, house, Newland Park; W. Jackson & Son, Ltd., re-building house and shop, 299, Holderness-road; H. H. Pearce, house, Newland Park; Needler's, Ltd., additions, Bournemouth-street; J. B. Arnett, garage, 51, Hymers-avenue; Hull Trades Council and Labour Party, club and institute, Kingston-square and Charles-street; C. Saunders, garage, Newland Park; Reckitt & Sons, Ltd., garage, Dansom-lane; G. & T. Earle, Ltd., roof over coal dryer, Wilmington; Needler's, Ltd., re-drainage, Bournemouth-street; Hull City Garage, Ltd., alterations, Beverley-road; T. P. Iveson, garage, 25, Kelvin-street; Lofthouse & Saltmer, stores and garage, Church-lane and High-street; Reckitt & Sons, Ltd., roof, Dansom-lane; Smith & Newphew, additions, Neptune-street; E. Gordon, factory, 27, Park-street; H. B. Camp, garage, 64, Marlborough-avenue; London Joint City & Midland Bank, Ltd., additions, Silver-street; Central Picture Hall Co., re-seating, Prospect-street; Armstrong & Co., alterations, King-street; Shiphan & Co., Ltd., garage, Westbourne-street; Hull Trades Council & Labour Party, alterations, Charles-street; Norman McKenzie, Ltd., additions, Princes-road; Chapman Bros., store, Cumberland-street; A. Barratt, shop front, stores, &c., Newland-avenue Anselm Odling & Sons, Ltd., additions, New Cleveland-street; Stewart & Craig, sub-station, Hedon-road; W. Field & Co., new roofs, High-street.

IBKESTON.—Plans approved: Schoolroom, Station-road, for the vicar.

KENDAL.—Plans by Messrs. Shaw & Stables, for alterations and additions to the King's Arms Hotel, for Mr. R. Rutter, are before the Council.

LEYTON.—Plans passed by U.D.C.:—Mr. J. A. Hennah, drainage of workshop and garage, Farmer-road; Mr. J. Miller, scullery, 75, Fairlop-road; the Exors. of Mr. W. Manders, house, Sanderstead-road; Mr. P. Cornish, roof over open space at 486, High-road, Leytonstone.

LEEDS.—The T.C. has granted certificates of approval of proposals to construct houses under Section 1 (2) of the Housing (Additional Powers) Act, 1919, to: B. Tasker in respect of one bungalow in Street-lane, Leeds; J. W. Perkin, concrete bungalow, in Green-hill-road, Armley; R. B. Hopkins, wooden bungalow near Moor-Allerton Hall, Leeds; E. Lord, semi-detached house in Montague-drive, Roundhay; J. Kay, semi-detached house in Montague-drive, Roundhay; G. Wilson, 2 semi-detached houses in Church-lane, Cross Gates; A. S. Wadsworth, three wooden bungalows at Park Springs, Wood-lane, Farnley.

LINCOLNSHIRE.—The Light Railways Committee of the C.C. has approved of light railway schemes for the county estimated to cost £550,000.

LIVERPOOL.—The T.C. proposes selling land on the east side of Berry-street to Messrs. John Pollitt & Sons, subject to the buildings being erected thereon being approved by the surveyor.

LONDON (BETHNAL GREEN).—Rebuilding of "The Ship" public house, 473, Bethnal Green-road; Drainage plans passed by the B.C.: At 107, Bethnal Green-road, for Messrs. Wire & Forrest; at 7, Margaret-place, for Mr. F. G. Knight; at 39 and 41, Granley-street, for Mr. R. Gregory; at 67 and 69, Mape-street, for Messrs. Hennessy & Son; at Crescent Cottages, for Messrs. W. Gladding & Co.; at 2, 3, 4, 5, 6 and 7, Primrose-street, for Messrs. Holman & Goodsham.

LONDON (GREENWICH).—Drainage plans passed by the B.C.: At 34 and 48, Armitage-road, for Mr. J. Pinch; at Hope Villa, Shooter's-hill-road, for Messrs. J. Cripps & Sons; at 29, Wellington-street, for Mr. W. Swetman; at 1, Nelson-street, for Messrs. North Robin & Wilsdon; at Anchor and Hope-lane, Charlton, for the United Glass Bottle Manufacturers, Ltd.; at 110, West-street, for Mr. J. J. Forest. Plans of two houses at Westcombe Park-road, for Mr. A. Shore, 38, Crooms-hill, Greenwich, have been passed.

LONDON (HACKNEY).—Plans passed by B.C.: Sanitary work, Morley Hall, Mare-street, for Messrs. G. Pearson & Son; drainage works, 133, Upper Clapton-road, for Messrs. J. Hamilton & Son; drainage, 100 Northwold-road, for Mr. G. Stoddart; sanitary works, 43, Ridley-road, for Messrs. Perry Bros.

LONDON (SOUTHWARK).—Drainage plans passed by B.C.: Co-operative Printing Society, to 49, Surrey-row; Union Cold Storage Co., to Nelson's Wharf, Commercial-road; Southwark Board of Guardians, to Southwark Institution, Gray-street; Selwyn Electrical Engineering Co., to 37, Union-street.—The B.C. has approved of estimates of £4,442 for alterations at Lavington-street Baths, and £5,010 for the provision of a new laundry in King James-street.

MANCHESTER.—The East Lancashire Freemasons have secured the site of the former Queen's Theatre on which to build a Masonic hall. The scheme will involve an outlay of £150,000.

MIDDLESBROUGH.—Plans submitted for the conversion of dwelling-houses at Southfield Villas into a workmen's club for the Tees-side Ironworks have been remitted to the Housing Committee.

NELSON.—Plans passed by T.C.:—Reedyford Mill Co., weaving shed, Scott-street; J. T. Hocking, shop front, 144, Leeds-road; W. Howarth, workshop, Back Cliffe-street; J. Moran, motor garage, Lea-road; T. Slinger, workshop, Manchester-road; the Rev. R. Smith, hostel; H. Howarth, motor garage, 11, Glenfield-road; and the Hospital Committee, an office at Reedyford.

NORTHAMPTON.—Plans passed: House, Kingsthorpe-grove, for Mr. J. S. Clarke; additions and alterations, 64, Marefair, for Messrs. W. H. Smith & Son; extension of garage, Lincoln-street, for Messrs. Padmore & Barnes; additions, St. Giles'-street, for Mr. Jones Moss; store, Gray-street, for Mr. W. J. Rowthorn.

NOTTINGHAM.—Sir Jesse Boot, Bt., has announced his desire to defray the cost of a new road—part of a Corporation scheme to link up Nottingham and Beeston, at an estimated cost of £200,000, by tramway. The projected road will form a boulevard 150 ft. wide, and about three miles long, and will be planted with trees.

PAISLEY.—The Dean of Guild Court has approved of plans of a creamery and motor garage, proposed to be erected by Paisley Provident Co-operative Society, Ltd., at an estimated cost of £18,000.

PLYMOUTH.—Plans passed by T.C.: J. R. Salter, alterations and additions, Butchers' Arms, Cremyll-street; Miss Rogers, bay window, 11, Greenbank-terrace; C. Gerry, addition, 23, Edgar-terrace; S. Stephens, stable, rear of 55, Ebrington-street; Mrs. W. Webb, addition, 53, Lydford Park-road; Lord St. Levan, addition to cottage, Chapel-street, Devonport; F. J. Squance, two dwelling houses, Cedarcroft-road; additions, Friary Social Club, Grenville-road; Ash & Sons, alterations and additions, Foresters' Arms, Duke-street, Devonport; T. H. Body, extensions of garage, two Wingfield Villas; A. W. Lethbridge, two bungalows, Langstone-road; M. Fredman, canopy, Metropole Theatre, Tavistock-street; Montague Burton, Ltd., alterations, 96, Fore-street, and 5 and 6, Lambert-street; Navy and Army Canteen Board, alterations and additions to Warehouse Buildings, Tamar-street.

PRESTON.—Plans passed by T.C.: Alterations, 159, Friargate, Mr. E. J. Andrew, for Mr. W. T. Rigby; motor shed, Ribbledale-place, Mr. E. J. Andrew, for Mr. P. Yates; shed, Havelock-street, Mr. E. J. Andrew, for Mr. E. Vincent; offices, Kent-street, Messrs. J. H. & W. C. Mangan, for Messrs. P. Berry & Sons; workshop, Manchester-road, Messrs. J. H. & W. C. Mangan, for Mr. R. Main; addition, 32, Brackenbury-road

*See also our List of Contracts, Competitions, etc.

for Mr. P. H. Shepperd; shop front, 424, New Hall-lane, for Mr. P. H. Shepperd; additions to bakery 7, Plungington-road, for Mr. A. W. Forshaw; rebuilding premises, Fishergate, Messrs. Garlick & Andrew, for the London, County, Westminster, & Parr's Bank; alterations, 7, Fox-street, for Mr. A. J. T. Ellison; additions, Crook-street, Mr. A. J. T. Ellison, for J. Cartmell & Sons; offices, &c., Aqueduct-street, for Mr. H. Heaton; garage, Long-lane, for Mr. J. Shorrock.

ROTHERHAM.—Plans passed by T.C.: W. R. Redmayne, 77, Fitzwilliam-road, washhouse, steel stancheons and bars and timber and slated roof; J. Stansfield, Oxford-street, extension to bulding; J. Clayton, Sheffield-road, alteration and additions to buildings; Garnett Bros., Ltd., Cottenham-road, detached dwelling-house.

SALFORD.—Plans passed by T.C.:—Construction of chimney, Worsley-street, Salford; fanhouse, Meadow-road, Broughton; motor car shed, Bright-street, Broughton; boiler house, Sager-street and Union-street, Broughton; sanitary accommodation, "Windsor Bridge Tavern," Salford; engine house, Strawberry Hill, Pendleton; house, Waterpark-road, Higher Broughton; boiler house, Indigo-street and Whit-lane, Pendleton; sanitary accommodation, "Shakespeare Inn," Goodiers-lane and Martha-street, Salford; extension of premises, Ordsall-lane, Salford; reconstruction of workshop, Hunt's-court, Salford; alterations to "Ye Olde Priory Inn," Laurel-grove, Broughton; construction of gas works, Kellett-street and New River-street, Weaste; garage, Vernon-road, Broughton; additions to dwelling-house, Holden-road, Broughton; "Oak Lea," Nelson-street and Camp-street, Broughton; extensions to brewery, Cook-street, Salford.

SOUTHPORT.—The Highways Committee has sanctioned the initiation of work on a new cinema theatre, to be erected in Lord-street on a site between Christ Church and London-square, provided that not more than four bricklayers are employed and that work ceases if it is found to be prejudicing the housing scheme.

SOUTH SHIELDS.—Plans passed: Mr. Howard Hill, for Mr. W. Heath, Greenhouse, 146, Sandwich-road; Mr. Howard Hill, for Mr. Jas. Tullis, extension of joiner shop, Garden-lane; Mr. J. H. Morton, for Mrs. A. Valenti, alterations to premises, 3 and 5, Ocean-road; Mr. J. H. Morton, for the South Shields R.A.O.B. Institute, Ltd., club and sanitary arrangements at 44, Laygate-lane; Mr. Jas. Isdale, for Messrs. T. W. Law, Bungalow, North side of Hepscott-terrace; Mr. Henry Chapman, for Messrs. Smith, extension to foundry premises and new joiners shop Nile-street.

WALLASEY.—The third Corporation housing scheme next to be proceeded with is on the Belvidere-road site. The estate of the late Dr. Bell, lying between St. George's Mount and Field-road, has been acquired by Mr. Moses Hughes, who proposes to erect seventy-nine houses thereon. The land between Marlowe-road, Breck-road, and Wallasey-road is being rapidly built upon by private enterprise, and also the land fronting the parish church.

WALTHAMSTOW.—Plans passed: Addition to factory, Blackhorse-lane, for the Micanite Co., Ltd.; bread-room, flour store and garage, 163, Wood-street, for Mr. J. Pegrum.

WEST BROMWICH.—The T.C. has approved of the lay-out of a scheme for housing on the Charlemont site in the All Saints' district. The lay-out will provide for 388 more houses and 12 shops, together with schools, recreation grounds, &c.

WILLESDEN.—Plans passed by U.D.C.: Addition to factory, Park Royal Engineering Works, Cumberland-avenue, by Messrs. Hart & Waterhouse, for the Park Royal Engineering Co., Ltd.; ten dwelling houses, Gladstone Park Gardens, Cricklewood, for Mr. F. W. Brealy; branch bank, 147, The Broadway, Cricklewood, by Mr. T. B. Whinney, for the London Joint City and Midland Bank, Ltd.; addition to shop premises, 54, Canterbury-road, Kilburn, by Messrs. Trant Brown & Brightiff, for Messrs. Moses Bros.; office, Central Works, Edgware-road, Cricklewood, by Mr. W. Lumb, for Messrs. S. Smith & Sons, Ltd.; alterations to shop, 175, The Broadway, Cricklewood, by Messrs. Cannon & Sons, for Messrs. Peark's Dairies, Ltd.; internal alterations to factory, 380, High-road, Willesden, for the Peachey Process Co., Ltd.

WORTHING.—Plans passed by T.C.: Conversion of 113, Marine-parade into flats, Mr. H. M. Potter, for C. Greenyer; conversion of 1, Heene-terrace into flats, Mr. H. M. Potter, for L. B. Greenyer; additionto 20, Teville-road, Mr. H. M. Potter, for Mr. Head; conversion of premises on the South side of Ann-street into billiard rooms, Mr. H. M. Potter, for H. Hutchings; conversion of 10, Heene-terrace into flats, Messrs. Patching & Co., for H. C. Newton.

YORK.—Plans passed: York Glass Co., Ltd., new produce plant and coal store, Fishergate; J. Terry & Sons, Ltd., alterations, St. Helen's-square; H. Leetham & Sons, Ltd., temp. engine shed, Foss Islands; Myers & Burnell, alterations, Davygate; W. E. Puckering, pantry, 17, Clifton; E. B. Hardcastle, alterations, 25, Layerthorpe; N.E.R. Co., alterations to house, Foss Islands; A. Harrison, bathroom and w.c., 60, Layerthorpe.

FIRES.

CITY OF LONDON.—A fire, causing damage, which has been estimated at from £25,000 to £30,000, has occurred on the premises of White & Co., ladies' robe manufacturers, Bayer-street, Golden-lane.

INVERNESS.—The old and well-known mansion house of Lochletter, belonging to the Countess of Seafield, has been totally destroyed by fire.

ISLE OF MAN.—A fire has resulted in the destruction of Corlett's Flour Mills, Laxey. The damage is estimated at £60,000.

PAISLEY.—Damage estimated at about £4,000 has been caused by a fire in the garage at 1, Lonend-lane, occupied by Mr. Alex. Black, motor engineer.

PECKHAM.—Premises at Linden-grove, occupied by Leith & Woods, coathanger manufacturers, have been damaged by fire.

NEW COMPANIES.

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd. Company Registration Agents, of 116 & 117, Chancery-lane, W.C.2, from the documents available at the Companies' Registry.

FRANK S. MAYO, LTD. (170,972). Registered October 22. 11, Queen Victoria Street, E.C. Builders' merchants. Nominal capital, £25,000.

GWALIA BRICK CO., LTD. (171,464). Registered November 17. 15, Woodland-place, Penarth. Nominal capital, £15,000.

RAMMED EARTH HOUSES, LTD. (171,473). Registered November 17. 56, Victoria-street, S.W. Builders and contractors. Nominal capital, £2,000.

JOHN COBHAMS, LTD. (171,664). Registered November 26. Builders' merchants, cement merchants, &c. Nominal capital, £2,500.

JABEZ TAYLOR, LTD. (171,570). Registered November 23. 46, Ardwick-green, Ardwick, Manchester. Builders' merchants and contractors. Nominal capital, £10,000.

LONDON WARMING CO., LTD. (171,491). Registered November 18. 20, Newman-street, Oxford-street, W. Manufacturers of anthracite and other stoves and ranges. Nominal capital, £50,000.

LINGA TIMBER CO., LTD. (171,069). Registered October 27. 1, Victoria Buildings, Manchester. Timber merchants. Nominal capital, £20,000.

MANOD GRANITE CO., LTD. (171,399). Registered November 13. Quarry masters and stone merchants. Nominal capital, £10,000.

NORTHFLEET TILE AND CONCRETE CO., LTD. (171,517). Registered November 19. 27, Queen Victoria-street, E.C. 4. Nominal capital, £10,000.

SMITHS' BUILDERS' ACCESSORIES, LTD. (171,361). Registered November 11. 38A, Wyvill-road, South Lambeth, S.W.8. Nominal capital, £3,500.

SYNLAC, LTD. (170,957). Registered October 21. Manufacturers and dealers in varnishes and paints. Nominal capital, £3,200.

SWINGLER'S DAMP-PROOF WALLS AND CONCRETE CO., LTD. (171,072). Registered October 27. Tower Works, Stanbridge-road, Leighton Buzzard, Bedford. Nominal capital, £5,000.

JOHN TINLINE, LTD. (171,068). Registered October 27. Parker-street Saw Mills, Bury, Lancaster. Builders and contractors. Nominal capital, £40,000.

WEST MELTON BRICK AND FIRE CLAY CO., LTD. (171,149). Registered October 30. Lindin Villa, West Melton, near Rotherham. Nominal capital, £8,000.

SHEAF TURFS PRODUCERS, LTD. (171,240). Registered November 4. Bank Court-chambers, off Bank-street, Sheffield. Nominal capital £2,030.

TAUNTON BUILDING GUILD, LTD. (171,305). Registered November 8. 33, Eastleigh-road, Taunton, Somerset. Builders and contractors. Nominal capital, £500.

WILLIAM RAMSAY, LTD. (171,048). Registered October 20. Decorators, painters and plumbers. Nominal capital, £7,500.

JACOB SMITH, LTD. (171,015). Registered October 25. Timber merchants. Nominal capital, £10,000.

W. J. TAYLOR & SONS, LTD. (170,897). Registered October 18. The Saw Mills, Steam Mills-road, Midsomer Norton, Somerset. Timber merchants and saw mill proprietors. Nominal capital, £12,000.

WEARDALE QUARRIES, LTD. (171,533). Registered November 19. County-chambers, Marton-road, Middlesbrough. Quarry owners. Nominal capital, £5,000.

GEO. WEBB & SON, LTD. (171,063). Registered October 27. Builders and contractors. Nominal capital, £10,000.

WEST CUMBERLAND PORTLAND CEMENT SYNDICATE (MARYPORT), LTD. (171,450). Registered November 10. Court House-buildings, Cockermouth, Cumberland. Quarry masters and stone merchants. Nominal capital, £1,000.

PATENTS.

APPLICATIONS PUBLISHED.*

151,852.—C. Honda: Road-making or paving materials, and method of manufacturing same.

151,853.—J. Richard and U. Dubois: Composition paint.

151,866.—T. Lant: Means for ensuring uniformity in laying mortar.

151,881.—M. S. Stratton: Reinforcement corners and edgings for boxes.

152,081.—F. H. Bond: Fasteners for windows.

152,097.—A. Wray: Windows and window-frames.

152,106.—R. W. Lesley: Utilisation of low-grade carboniferous material in the manufacture of Portland cement.

152,114.—Vickers, Ltd., and Sir G. T. Buckham: Machines for moulding articles of concrete.

152,160.—W. J. Stewart & J. Woolcock: Concrete floors.

152,173.—P. L. G. Johnston, R. R. G. Chisholm, and W. A. Martin: Concrete-faced heat-insulating walls, floors and ceilings.

152,212.—J. McCrindle: Windows.

152,241.—W. T. Rogers: Bonding building-block.

152,370.—A. Mackenzie (legal representative of J. W. Mackenzie, deceased) (W. H. Wheeler): Fire-proof doors.

152,397.—G. C. Royse: Reinforcing elements for concrete.

152,405.—J. Carter and W. Bennett: Building blocks or the like.

152,407.—J. A. Weis: Construction of contractible bridges and girders.

152,431.—J. M. Hattersley and L. T. Bulman: Device for locking doors, windows, or the like against movement.

152,440.—Z. Watkins: Sliding-sash windows.

152,443.—F. W. Lewis: Felt roofing.

A Builder's Estate.

The late Mr. William Best, builder, of Leeds left estate valued at £14,446.

"Willing's Press Guide."

The contents of the forty-eighth edition of "Willing's Press Guide" (London: James Willing, Ltd., price 2s.) are arranged on the same lines as the previous edition, and form a very complete guide to periodicals published in the United Kingdom. The first 205 pages are devoted to an alphabetical list of some 7,000 publications, and in subsequent sections these are arranged (1) according to trades, professions and subjects; (2) according to time of publication; (3) according to towns or districts. The Metropolitan papers and the London addresses of provincial papers are given in separate sections, and a list of foreign and colonial publications is contained in some 30 pages.

New Companies Registered in 1920.

A table prepared by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116-117, Chancery-lane, W.C., shows that the number of new companies registered at Somerset House during 1920 was the largest on record. There was, however, a considerable falling off in the second half of the year, both in the number of new concerns and the capitalisation. The following are the figures for companies connected with the building industry, showing the number of companies and the total capital in each half year:—

January to June: Bricks, Cement, &c., 9 companies, £3,467,500 capital; Builders, 3 companies, £755,000 capital; Land, Houses, &c., 18 companies, £4,998,100 capital; Timber, 6 companies, £1,650,300 capital. July to December: Bricks, Cement, &c., 2 companies, £48,000 capital; Builders, 2 companies, £460,000 capital; Land, Houses, &c., 13 companies, £831,800 capital; Timber, 1 company, £25,000 capital.

* All these applications are now in the stage in which opposition to the grant of Patents upon them may be made.

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue, various prices have been revised.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.	£ s. d.
Best Stocks	5 1 6

Per 1000, Delivered at London Goods Stations.	£ s. d.		£ s. d.
Flettons	3 17 0	Best Blue Pressed Staffordshire	12 4 0
Best Stourbridge Fire bricks	12 14 0	Do. Bullnose	12 14 0
		Blue Wire Cuts	10 6 6
GLAZED BRICKS—			
Best White, Ivory, and Salt Glazed Stretchers	29 10 0	D'ble Str'tch'rs	38 0 0
		D'ble Headers	35 0 0
		One Side and two Ends	39 0 0
Headers	29 0 0	Two Sides and one End	40 0 0
Quoins, Bullnose and 4½in. Flats	36 0 0	Splays and Squints	37 10 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.		
Thames Ballast	19 6	per yard,	delivered 2 miles radius Paddington.
Pit Sand	25 0	,, ,,	
Thames Sand	25 6	,, ,,	
Best Washed Sand	25 6	,, ,,	
¾ in. Shingle for Ferro-Concrete	24 6	,, ,,	
¼ in ,, ,,	25 6	,, ,,	

Per ton, delivered in London area.	£ s. d.		£ s. d.
Best Portland Cement	4 7 6	..	4 13 0

80/6 alongside at Vauxhall in 80-ton lots.

Ferrocrete per ton extra on above	10 0
Best Ground Blue Lias Lime	3 12 6 at rly. depot.

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 6d. each and credited at 2s. each if returned in good condition within three months.

Grey Stone Lime ..... 75s. 0d. per ton delivered.
Stourbridge Fireclay in s'cks 44s. 8d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	3 2½
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	3 5½
Do. do. delivered on road wagons at Nine Elms Depot	3 6½
PORTLAND STONE— Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 11½
Do. do. delivered on road wagons at above stations, per ft. cube	5 0½

White basebed, 3d. per ft. cube extra.

NOTE.—½d. ft. cube extra for every foot over 20 ft. *average*, and ½d. beyond 30 ft.

	s. d.
YORK STONE, BLUE—*Robin Hood Quality.* Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	17 4
6 in. sawn two sides landings to sizes (under 30 ft. super.) ..... Per Ft. Super	11 10½
6 in. rubbed two sides, ditto ..... ,,	13 3½
3 in. sawn two sides slabs (random sizes) ,,	5 3
2 in. to 2½ in. sawn one side slabs (random sizes) ..... ,,	3 2
1½ in. to 2 in. ditto, ditto ..... ,,	2 9
HARD YORK— Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	13 3
6 in. sawn two sides landing to sizes (under 40ft. super.) ..... Per Ft. Super	10 3
6 in. rubbed two sides ditto ..... ,,	12 1
4 in. sawn two sides slabs (random sizes) ,,	6 2
3 in. ditto, ditto ,,	4 11
2 in. self-faced random flags .. Per Yard Super	16 2

WOOD.

GOOD BUILDING DEAL.

Inches	£ s.	
4 × 11	67 10	per standard
4 × 9	67 10	,,
4 × 8	60 0	,,
4 × 7	50 0	,,
3 × 8	48 10	,,
3 × 7	47 10	,,
2½ × 7	47 10	,,
3 × 6	45 0	,,
3 × 11	65 0	,,
2 × 11	65 0	,,
3 × 9	57 10	,,
2½ × 9	57 10	,,
3 × 4½	47 10	,,
3 × 4	47 10	,,

PLANED BOARDS.

1 × 11	67 10	,,
1 × 9	65 0	,,

PLAIN EDGE FLOORING.

Inches		
¾	40/-	per square
1	45/-	,,
1¼	52/6	,,
1½	66/-	,,
1¾	75/6	,,

TONGUED AND GROOVED FLOORING.

Inches		
1	52/-	per square
1¼	65/-	,,
1½	75/-	,,

WOOD (*Continued*).

MATCHINGS (BEST).

Inches		
¾	36/-	per square
¼	42/6	,,
1	54/-	,,

BATTENS.

Inches	£ s.	
¾ × 2	45 0	per standard

SAWN LATHS.

Per bundle					0 6 6	
Dry Wainscot Oak, per ft. super, as inch	0 3 6	to	0 4 0			
¼ in. do. do.	0 3 0	..	—			
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0 2 6	to	0 3 0			
Cuba Mahogany	0 4 0	to	0 4 6			
Teak (Rangoon, Moulmein or Java), per load	75 0 0	to	85 0 0			
American Whitewood planks, per ft. cube	0 18 0	to	1 4 0			
Scotch Glue, per cwt.	10 0 0	..	—			
Liquid Glue, per cwt.	6 12 0	..	—			

SLATES.

1st quality slates from Bangor or Portmadoc in truck load delivered London area. Per 1,000 of 1,200.

		£ s. d.
Best Blue Bangor Slates,	24 by 12	56 10 0
	22 by 12	46 0 0
First quality ,, ,,	22 by 11	42 10 0
,, ,,	20 by 12	42 0 0
Best Blue Portmadoc	20 by 10	36 10 0
,, ,,	18 by 10	29 10 0
First quality ,,	18 by 9	24 5 0
,, ,,	16 by 10	22 15 0
,, ,,	16 by 8	18 0 0

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district	6 15 0
Ditto hand-made ditto	7 5 0
Ornamental ditto	7 2 6
Hip and valley tiles (per dozen)	0 15 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—	£ s. d.
R. S. Joists, cut and fitted	36 0 0
Plain Compound Girders	40 0 0
Stanchions	42 0 0
In Roof Work ,,	46 0 0

WROUGHT-IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £15 net value delivered direct from works. 5 per cent. less above gross discounts, carriage forward if sent from London stocks.)

	Sizes up to and including ¼ in. Tubes.	Sizes up to and including 2in. Tubes.	Fittings.	Sizes 2½ in. to 6 in. Tubes.	Fittings.
Gas	+ 7½	+ 5	— 5	— 2½	— 17½
Water	+ 17½	+ 15	Net	+ 6½	— 15
Steam	+ 28½	+ 26½	+ 5	+ 16½	— 12½
Gal. Gas	+ 32½	+ 30	+ 5	+ 22½	— 7½
,, Water	+ 45	+ 42½	+ 10	+ 33½	— 5
,, Steam	+ 57½	+ 55	+ 15	+ 45	— 2½

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe s. d.		Bends, stock angles. s. d.		Branches, stock angles. s. d.
2 in. per yd. in 6 fts.	6 10	..	4 10	..	5 9½
2½ in. ,, ,,	7 10½	..	5 4	..	7 3
3 in. ,, ,,	9 8½	..	5 9½	..	8 8½
3½ in. ,, ,,	10 9	..	7 3	..	10 2
4 in. ,, ,,	11 9½	..	8 2½	..	11 7½

RAIN-WATER PIPES, &c.

	Pipe. s. d.		Bends, stock angles. s. d.		Branches, stock angles. s. d.
2 in, per yd. in 6fts. plain	5 9	..	3 0	..	4 2
2½ in. ,, ,,	6 4	..	3 7	..	5 0
3 in. ,, ,,	7 6	..	4 6	..	6 8
3½ in. ,, ,,	9 1	..	5 3	..	7 9
4 in. ,, ,,	10 0	..	6 6	..	9 6

L.C.C. DRAIN PIPES,—9 ft. lengths London Prices.
per yd.: 4 in., 14/-. .. 5 in., 17/9. .. 6 in., 21/5.

IRON—	Per ton in London. £ s. d.		£ s. d.
Common Bars	34 10 0	to	35 10 0
Staffordshire Crown Bars— good merchant quality	35 0 0	—	37 0 0
Staffordshire "Marked Bars"	36 10 0	—	38 10 0
Mild Steel Bars	32 0 0	—	34 0 0
Steel Bars. Ferro-Concrete quality, basis price	32 0 0	—	34 0 0
Hoop Iron, basis price	40 0 0	..	42 0 0
,, ,, Galvanised	60 0 0	—	64 0 0
Sheet Iron, and Soft Steel Black—			
Ordinary sizes to 20 g.	40 0 0	..	42 0 0
,, ,, ,, 24 g.	41 0 0	..	42 0 0
,, ,, ,, 26 g.	43 0 0	..	44 0 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality—			
Ordinary sizes, 6ft. by 2ft. to 3ft. to 20 g.	50 0 0	..	52 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 22 g. and 24 g.	51 0 0	..	53 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 26 g.	53 0 0	..	55 0 0
Flat and Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 9ft. 20 g.	40 0 0	..	41 0 0

METALS (*Continued*).

	Per ton in London. £ s. d.		£ s. d.
Ordinary sizes, 6ft. to 9ft. 22 g. and 24 g.	41 0 0	..	42 0 0
Ordinary sizes, 6ft. to 9ft. 26 g.	43 0 0	..	45 0 0
Sheets Galvanised Flat, Best quality—			
Best Soft Steel Sheets, 6ft. by 2ft. to 3ft. to 20g. and thicker	48 0 0	..	49 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	49 0 0	..	50 0 0
Best Soft Steel Sheets 26 g.	50 0 0	..	52 0 0
Cut Nails, 3in. to 6in. (under 3in. usual trade extras.)	45 0 0	..	47 0 0

LEAD, &c.

	Delivered in London. £ s. d.		£ s. d.
LEAD Sheet, English, 4 lb. and up	39 0 0	—	—
Pipe in coils	39 10 0	..	—
Soil Pipe	42 0 0	..	—
Compo pipe	42 0 0	..	—

NOTE—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills ..... per ton	16 0 0	..	—
Do., ex country, carriage forward ..... per ton	17 0 0	..	—
COPPER— Strong Sheet ....per lb.	0 2 3	..	—
Thin ,, ... ,,	0 2 4	..	—
Copper nails .... ,,	0 2 3	..	—
Copper wire .... ,,	0 2 4	..	—
TIN—English Ingots ,,	0 2 6	..	—
SOLDER—Plumbers' ,,	0 1 4	..	—
Tinmen's ,,	0 1 9	..	—
Blowpipe ,,	0 2 0	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	5½d.	32 oz. fourths	11d.
,, thirds	6d.	,, thirds	1/-
21 ,, fourths	7½d.	Fluted, Obscured and Enamelled Sheet.	
,, thirds	8½d		
26 ,, fourths	9½d	15 oz.	8½d.
,, thirds	10½d.	21 ,,	10½d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
¼ Rolled plate	5½d.
⅜ Rough rolled	6½d.
½ Rough rolled	7½d
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	7½d.
Ditto, tinted	8½d.
Rolled Sheet	6½d.
White Rolled Cathedral	8½d.
Tinted do.	7½d.

Cast Plate is ½d. extra on the price of rough rolled.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil	in pipes ..... per gallon	0 4 8
,, ,, ,,	in barrels .... ,,	0 4 9
,, ,, ,,	in drums .... ,,	0 4 10
Boiled ,, ,,	in barrels .... ,,	0 5 3
,, ,, ,,	in drums .... ,,	0 5 5
Turpentine	in barrels ..... ,,	0 9 5
,,	in drums (10 gall.) .. ,,	0 9 11
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		67 15 0
GENUINE WHITE LEAD PAINT— "Father Thames," "Nine Elms," "Park," "Supremus" and other best brands (in 14 lb. tins) not less than 5 cwt. lots ..... per ton delivered		93 15 0
Red Lead, Dry (packages extra) ..	per ton	50 0 0
Best Linseed Oil Putty	per cwt.	1 5 0
Filocol	per cwt.	1 0 6
Size. X D Quality	fkn.	0 5 9

VARNISHES, &c.

	Per gallon. £ s. d.
Oak Varnish ..... Outside	0 18 0
Fine ditto ..... ditto	1 0 0
Fine Copal ..... ditto	1 1 3
Pale Copal ..... ditto	1 2 6
Pale Copal Carriage ..... ditto	1 4 6
Best ditto ..... ditto	1 14 6
Floor Varnish ..... Inside	0 19 0
Fine Pale Paper ..... ditto	0 18 0
Fine Copal Cabinet ..... ditto	1 2 6
Fine Copal flatting ..... ditto	1 0 6
Hard drying Oak ..... ditto	0 18 0
Fine Hard drying Oak ..... ditto	0 19 0
Fine Copal Varnish ..... ditto	1 0 6
Pale ditto ..... ditto	1 2 6
Best ditto ..... ditto	1 14 6
Best Japan Gold Size	0 16 6
Best Black Japan	1 0 9
Oak and Mahogany Stain (water)	0 17 6
Brunswick Black	0 11 9
Berlin Black	0 19 9
Knotting (patent)	1 18 6
French and Brush Polish	1 14 0
Liquid Dryers in Terebine	0 16 0
Cutrass Black Enamel	0 0

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

CURRENT PRICES FOR BUILDING WORK IN LONDON.*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	23	0
Add if in clay	" "	2	0
Add for every additional depth of 6 ft.	" "	1	6
Planking and strutting to trenches	per foot super	0	7½
Do. to sides of excavation, including shoring	" "	1	6

CONCRETOR.

		s.	d.
Portland cement concrete in foundation 1 to 6	per yard cube	55	0
Add if in underpinning in short lengths	" "	10	0
Add if in floors 6 in. thick	" "	4	0
Add if in beams	" "	5	0
Add if aggregate 1 : 2 : 4	" "	15	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	"	4	6

BRICKLAYER.

		£	s	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	50	15	0
Add if in stocks	"	12	10	0
Add if in Staffordshire blues	"	34	10	0
Add if in Portland cement and sand	"	4	15	0

FACINGS.

Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1¼

POINTING.

Neat flat strucks or weathered joint	" "	0	0	3½

ARCHES.

Extra only to the price of ordinary brickwork :—				
Fair external in half brick rings	" "	0	1	0
Axed in stocks	" "	0	2	0
Rubbed and gauged jointed in putty camber or segmental	" "	0	7	0

SUNDRIES.

Damp course in double course of slates breaking joint and bedded in Portland cement	" "	0	1	8
Setting ordinary register grates and stoves	each	1	5	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	"	6	15	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	9	0
Three-quarter-inch vertical damp course	" "	14	3
One inch on flats in two thicknesses	" "	12	0
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	" "	1	6

MASON.

		s.	d.
York stone templates fixed	per foot cube	22	0
York stone sills fixed	" "	35	0
Bath stone and all labour fixed	" "	16	9
Portland stone fixed	" "	26	0

SLATER.

		s.	d.
Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	98	0
Do. 20 in. × 10 in. Do. Do.	"	115	0
Do. 24 in. × 12 in. Do. Do.	"	117	6

CARPENTER AND JOINER.

		s.	d.
Fir framed in plates	per foot cube	9	0
Do. joists	" "	10	0
Do. roofs, floors and partitions	" "	11	3
Do. trusses	" "	13	6

		¾"	1"	1¼"	1½"
Deal rough close boarding	per sq.	60/–	81/–	100/–	108/–

		s.	d.
Flat centering for concrete floor, including struts or hangers	"	68	0
Do. to beams	per ft. sup.	1	10
Centres for arches	"	2	4
Gutter boards and beams	"	1	9

FLOORING.

		¾"	1"	1¼"	1½"
Deal-edges shot	per sq.		82/–	104/–	120/–
Do. tongued and grooved	"		88/–	110/–	127/–
Do. matchings	"	74/–	89/–		
Moulded skirting, including backings and grounds	per ft. sup.	2/4	2/8	3/2	3/8

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	2	0
Two Do. Do. Do.	" "	2	6
Add for fitting and fixing	" "	0	6
Deal-cased frames with 1 in. inner and outer linings, 1½ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights ; average size	" "	5	6

DOORS.

		1½"	1¾"	2"
Two-panel square framed	per ft. sup.	2/8	2/11	3/1
Four-panel Do.	"	3/–	3/4	3/7
Two-panel moulded both sides	"	3/4	3/7	3/10
Four-panel Do. Do.	"	3/8	3/11	4/2

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	22	0

		1"	1¼"	1½"
Plain deal jamb linings framed	per ft. sup.	2/3	2/5	2/9
Deal shelves and bearers	"	2/–	2/2	2/3
Add if cross tongued	"	2d.	2d.	2d.

STAIRCASES.

		1"	1¼"	1½"	2"	2½"
Deal treads and risers in and including rough brackets		3/4	4/–	4/8	—	—
Deal strings wrot in both sides and framed	"	4/6	4/9	—	—	—

		s.	d.
Housings for steps and risers	each	1	0
Deal balusters, 1 in. × 1¼ in.	per ft. run.	0	9
Mahogany handrail ; average 3 in. × 3 in.	" "	6	3
Add if ramped	" "	12	6
Add if wreathed	" "	25	0

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	9d.	Rim locks	2/6
Sash fasteners	1/–	Mortice locks	5/6
Casement fasteners	1/6	Patent spring hinges and letting in to floor and making good	20/–
Casement stays	1/3		
Cupboard locks	1/6		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	42	9
Plain compound girders	"	46	9
Do. stanchions	"	48	9
In roof work	"	52	9

RAIN-WATER GOODS.

		3"	4"	5"	6"
Half-round plain rebated joints	ft. run	2/–	2/6	3/9	4/3
Ogee Do. Do.	"	2/6	3/3	4/–	5/–
Rain-water pipes with ears	"	2/11	3/9		
Extra for shoes and bends	each	4/7	6/3		
Do. stopped ends	"	2/–	2/6	3/9	4/3
Do. nozzles for inlets	"	2/3	2/9	4/–	4/6

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	61	6
Do. Do. in flats	"	56	6
Extra labour and solder in coated cesspools	each	7	9
Welt joint	per ft. run.	0	6
Soldered seam	" "	2	1
Copper nailing	" "	0	8

		½"	¾"	1"	1½"	2"	4"
Drawn lead waste	per ft. run	1/1	1/9	2/–	3/7	4/6	
Do. service	"	1/8	2/2	2/8	4/3		
Do. soil	"						7/2
Bends in lead pipe	each					3/7	9/–
Soldered stop ends	"	1/4	1/10	2/3	3/2	3/10	
Red lead joints	"	1/–	1/2	1/5	2/1	2/8	5/5
Wiped soldered joints	"	3/2	3/10	4/6	5/5	7/2	10/10
Lead traps and cleaning screws	"				16/2	21/7	
Bib cocks and joints	"	7/6	11/3	18/–	48/–		
Stop cocks and joints	"	18/–	20/–	30/–	75/–		

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	3	4
Do. Do. Sirapite	" "	3	9
Do. Do. Keen's	" "	5	0
Add sawn lathing	" "	2	0
Add metal lathing	" "	3	6
Portland cement screed	" "	2	11
Do. plain face	" "	4	9
Mouldings in plaster	per 1 girth	0	3
One-and-a-half granolithic pavings	per yard sup.	6	11

GLAZIER.

		s.	d.
21 oz. sheet plain	per foot sup.	1	8
26 oz. Do.	" "	1	11
Obscured sheet	" "	2	1
⅛ in. rolled plate	" "	1	2½
¼ in. rough rolled or cast plate	" "	1	3½
¼ in. wired cast plate	" "	1	9

PAINTER.

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	1	6
Knotting and priming	" "	1	0
Plain painting 1 coat	" "	1	6
Do. 2 coats	" "	2	4
Do. 3 coats	" "	3	2
Do. 4 coats	" "	4	0
Graining	" "	3	0
Varnishing twice	" "	2	6
Sizing	" "	0	4
Flatting	" "	0	9
Enamel	" "	2	0
Wax polishing	per foot sup.	0	11
French polishing	" "	1	9
Preparing for and hanging paper	per piece	2/– to 5/–	

* These prices apply to *new buildings only*. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 1½ should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him *not later than first post on Wednesday.*

* Denotes *accepted.* † Denotes *provisionally accepted.*

‡ Denotes *recommended for acceptance.*

§ Denotes *accepted subject to modifications.*

BARMING.—For additions and alterations to "Cherry Tree" public house, Barming. Messrs. Ruck & Smith, architects :—

*R. Corben & Son	£2,700
G. E. Wallis & Sons	2,750
Elmore & Son	2,974
Barden & Head	3,087
Cox Bros.	3,250

BATH.—For construction of roads and sewers on the Englishcombe Housing site, for the T.C. :—

*E. Ireland	£17,609 11 3

BELFAST.—For (*a*) erection of 67 houses of various types on Cherry Valley site, and (*b*) erection of 43 houses on Dundela site, for the Corporation :—

*(*a*) McRoberts & Armstrong	£82,614 7 8
*(*b*) H. & J. Martin	50,542 7 2

BOURNEMOUTH.—For painting and decorating interiors of schools, for the T.C. :—

*C. H. Belbin—Alma-road Council School	£72 0
*Gerrey & Sons—Pokesdown Technical School	154 6

BOURNEMOUTH. — Reconstruction of surface water drain in Truscott-avenue, for the T.C. :—

*Grounds & Newton	£785 1 1

CHIPPING SODBURY.—For the erection of houses, and drainage works, for the R.D.C. Mr. Albert Clarke, Architect and Engineer, Council Offices, Chipping Sodbury. Quantities by Architect and Engineer.

*Thompson & Rossiter, Bristol.—
50 houses at Filton, Parlour Type, £49,450.
10 houses at Filton, non-Parlour Type, £8,990.
*J. McGowan, Frampton Cotterell.—
8 houses at Stoke Gifford, Parlour Type, £7,360.
4 houses at Stoke Gifford, non-Parlour Type, £3,320.
*Marshall & Slade, Chipping Sodbury.—
8 houses at Chipping Sodbury, Parlour Type, £7,420.
4 houses at Chipping Sodbury, non-Parlour Type, £3,335.
*Ayliffe & Cole, Badminton.
4 houses at Badminton, Parlour Type, £3,800
2 houses at Badminton, non-Parlour Type, £1,780.

CLACTON.—For construction of screens for the band pavilion, for the T.C. :—

*Boulton & Paul, Norwich	£840

CLACTON.—Erection of additional bathing accommodation on the East Cliff, for the T.C. :—

*Pearce & Field	£3,579

COOKSTOWN.—For the erection of 24 houses, for the U.D.C. Messrs. Robinson & Davidson, architects, Richmond-street, Londonderry.

John Colhoun, Londonderry	£27,520
Benson Bros., Corkhill Rock	25,599
Thos. McKeown & Sons, Stewartstown	25,389

(No tender accepted.)

DRAYTON AND SPIXWORTH (NORFOLK).—For the erection of houses at Drayton and Spixworth, for the St. Faith's R.D.C. Mr. T. Inglis Goldie, architect, Stiffkey, Wells :—

†Albert E. Palmer, Costessey, Norwich—

Drayton :	
Two pairs of cottages, Type "B2"	£3,081 0 0
Do. Do. Type "B2"	3,021 15 0
Drainage, paths fencing, &c.	246 17 6
Spixworth :	
Two pairs of cottages, "Type "B"	3,150 2 6
Drainage, paths, fencing, &c.	118 10 0

ENNISKILLEN.—For erection of a new bakery in Enniskillen, for the United Co-operative Bakery Society, Ltd., Glasgow. Mr. James Donnelly, architect, Enniskillen :—

*Henry Pierce & Sons, Enniskillen	£10,735 12 8
John Donnelly & Son, Enniskillen	10,800 0 0
Jas. Harvey & Sons, Enniskillen	10,995 0 0

ESSEX.—For the rebuilding of Woodford Bridge, for the C.C. :—

*W. & C. French, Buckhurst Hill	£13,800

FINCHLEY.—For conversion of fives courts, at Christ's College, Finchley, into workshop, for the Education Committee of the Middlesex C.C. Mr. H. G. Crothall, F.R.I.B.A., County Architect, Guildhall, Westminster :—

*H. Knight & Son	£1,451 0 0
Wm. Crosby & Sons	1,458 8 6
C. F. Cole	1,497 0 0
C. J. Newby & Bros.	1,660 0 0
W. Gibson & Co.	1,697 0 0
Mattock Bros.	1,740 0 0
Brand, Pettit & Co.	1,784 0 0
W. Lawrence & Son	1,798 0 0
A. Monk	1,915 0 0
W. Lacey	1,995 0 0

GLASGOW.—For heating wards at Knightswood Hospital, for the T.C. :—

*G. N. Haden & Sons	£3,310

GLASGOW.—For erection of Cadogan-street substation, for the T.C. :—

*J. Emery & Sons (Excavation and brick work)	£34,026 5 11
*Gibbs & Canning (Glazed earthenware work)	6,801 16 6
*A. Jamieson & Son (Joiner, &c. work)	3,341 17 0
*Steel & Wilson (Plumber work)	670 0 0
*M'Donald & Marshall (Painter work)	58 4 4½

GLASGOW.—For erection of sheds in connection with brickmaking works, for the T.C. :—

*P. & R. Fleming & Co.	£1,328 15

GLASGOW.—For plumber and gas-fitter's works at Municipal Buildings extension, for the T.C. :—

*W. Hendry & Son	£12,110

GLASGOW.—Provision of wash-house and drying-ground at Bridgeton Child Welfare Centre, for the T.C. :—

*Sharp & Co. (Plumber work)	£125 16 7
*M. Riddell (Bricklaying and painter works)	231 0 0

H.M. OFFICE OF WORKS (Accepted during November) :—

Building Works, &c.—Bangor Hospital, New-road : Watkin, Jones & Son, Bangor; Birmingham Telegraph Factory, cycle shed, &c. : J. E. Harper & Son, Ltd., Birmingham; Bristol Ministry of Pensions, alterations, &c. : Frank Wilkins, Bristol; Bristol Museum, reconstruction of roofs : W. J. Maddison, London, E.; Carshalton cottages, tiling : Hall & Co., Ltd., Croydon; Finchley Houses, tiling : J. J. Etridge, Junr., Ltd., London, E.; Harrogate Post Office, alterations : Wm. Irwin & Co., Ltd., Leeds; Hayes Instructional Factory, adaptation : T. Poore & Son, London, W.; Holloway Money Order Office, painting : Arthur H. Inns, London, E.C.; Islington sub-contract for joinery : Austins (East Ham and Ilford), Ltd., London, E.; Kettering Employment Exchange, Hutting : J. C. Neal, Ltd., Kettering; Lewisham, conversion of house : O. Kennard, London, S.E.; Luton Instructional Factory, alterations and new road : Arthur Cole, Ltd., Luton; National Physical Laboratory Extension, plastering : Geo. Rome & Co., London, S.W.; Wembley Post Office, erection : Wm. Daley & Co., London, W.

Engineering Services.—Cooking apparatus : Sidney Flavel & Co., Ltd., Leamington Spa; Fletcher, Russell & Co., Ltd., London, W.C.; R. & A. Main, Ltd., London, N.; Ipswich Instructional Factory, various : The Alpha Manufacturing Co., London, S.W.; National Gallery, heating : Palowkar & Sons, London, E.C; National Physical Laboratory, heating, &c. : Bilbie Hobson & Co., London, E.C.

Fittings, &c.—Joinery for Bedford : Wm. Duncan Tucker & Sons, Ltd., London, N.; W. H. T. Kelland & Sons, Ltd., London, N.; W. Laughton, Bedford; racks : E. R. Livermore, London, N.; Haigh & Co., Liverpool; shelving, &c. : G. W. Higgins & Son., London, W.; The Wycombe Aircraft Constructors, Ltd., High Wycombe; Siemens Bros. & Co., Ltd., London, S.E.; H. Hann, London, S.W.; telephone cabinets, &c. : Geo. M. Hammer & Co., Ltd., London, S.E.

Miscellaneous.—Bricks and cement : Smeed, Dean & Co., Ltd., Sittingbourne; water and smoke pipes : The Staveley Coal & Iron Co., Ltd., Chesterfield; The Thames Bank (Blackfriars) Iron Co., Ltd., London, S.E.

KIDDERMINSTER.—For the construction of 48 houses, for the T.C. :—

*Kidderminster Federation of Builders, Ltd.—"B" type, No. 2, £1,942 per pair; "B" type, No. 3, £3,848 per block of four; and "A" type, No. 5, £1,752 per pair.

LEEDS.—Erection of transformer station in Jacklane, Hunslet, for the T.C. :—

*W. Rodgers	£1,155 15 6

LEEDS.—Laying of pipes for Tadcaster water scheme, for the T.C. :—

*H. C. Pullar & Co.	£14,449 18

LEEDS.—For painting works, for the T.C. :—
Interior of York-road Baths, and exterior of York-road Baths and Library—F. E. Simpkin, £424
Bramley Baths—W. H. Pitts, £256 17s.

LEEDS.—For erection of four pairs of semi-detached houses and subsequent sale to the T.C. :—

*J. Barker—£1,050 per house (including land).

LIVERPOOL.—For framing and fixing roll of honour in crypt of Town Hall, for the Corporation :—

*Brown & Backhouse, Liverpool	£378

LIVERPOOL.—For repair of portions of roads at the Fazakerley Isolation Hospital, for the Corporation :—

*Liverpool Building Material & Cement Co., Everton	£2,123 3 2

LONDON.—For the erection of maisonnettes, for the Hackney B.C. :—

*Rowley Bros., Wood Green, N.—20 maisonnettes in Daubeney-road, £18,599; and 32 in Adley-street, £29,790.
*E. A. Roome & Co. Hackney—10 maisonnettes in Gilpin-road, £9,536.

MONCHELSEA (KENT).—For the erection of 12 houses, to be built in pairs, at the Cock Inn site, Boughton, Monchelsea, for the R.D.C. Mr. Thos. A. Busbridge, Architect, Council Offices, King-street, Maidstone.

*Norman Smith & Sons, Maidstone (6 houses)	£5,160
*Cox Bros., Maidstone (6 houses)	5,160

MAIDSTONE.—For erection of eight pairs of houses off Penenden Heath, Maidstone, for the Administrative Staff of the Kent County Council. Mr. W. H. Robinson, Architect :—

Cox Bros., Maidstone	£18,190
Martin & Newman, Maidstone	19,312
Norman Smith & Son, Maidstone	19,312
Clarke & Epps, Maidstone	19,658
J. Buck, Bearsted	19,720
Barden & Head, Maidstone	19,780
Geo. Pearce & Sons, Maidstone	19,850
T. E. Wallis & Sons, Ltd., Maidstone	19,900
R. Corben & Son, Maidstone	20,598
C. Walter, Maidstone	21,903

[Forwarded to Housing Commissioner.]

MINISTRY OF HEALTH (accepted during November) :—

Bricks : Messrs. Joshua Hartley & Co., Yorks; Mr. T. Harrison, Stretford; Messrs. Ruby Brick & Tile Co., Ltd., South Wales; Messrs. Moston Brick & Building Co., Ltd., Manchester; The Buckley Junction Metallic Brick Co., Ltd., Buckley Juncton; The Lion Brick & Tile Co., Scalford, near Melton Mowbray; The Highfield Nurseries, Ltd., Manor Park, E.; Hathern Station Brick & Terra Cotta Co., Ltd., Loughborough, Leicestershire; Messrs. Alfred Espley's Brickworks, Ltd., Stratford-on-Avon; J. Beddow & Sons, Ltd., Staffordshire; The Sand Glass Foundry, Doncaster; The Midland Iron Co., Ltd., Rotherham; Messrs. J. Ducket & Son, Lancs; J. R. Mitchell & Co., Ltd., Grimsby; A. N. Braithwaite & Co., Ltd., Holbeck, Leeds; The Pluckley Brick & Tile Co., Ltd., Pluckley; The Red Bank Manufacturing Co., Burton-on-Trent; Messrs. B. Whittaker & Sons, Ltd., Leeds; Wm. Thomas & Co., Ltd., Wellington, Somerset; Sussex Bricks Estate Co., Horsham; Midland Brick Co., Wellingborough; Moreton Brick & Tile Co., Moreton, near Birkenhead; Linthurst & Barnt Green Brick & Manufacturing Co., Ltd., High-street, Bromsgrove; Geo. Jenning, Parkstone; Hollybrook Brick Co., Ltd., Kingswood, Bristol; Federated Brickworks, Ltd., Rochdale; Furness Brick & Tile Co., Ltd., Barrow-in-Furness; The Tamworth Colliery, Alvecote, Tamworth; The London Brick Co., Ltd., London, N.; Edgerly & Seales, Shaw Brick Works, Newbury; Jesse Clack & Son, near Croydon; Glenfield Premier Brick & Terra Cotta Co., Ltd., Leicester; Parish & Hadley, Wednesbury, Staffs; Sicilian Products, Ltd., Sheffield; The Lunsford Co., Ltd., Bexhill, Sussex; A. G. Pitts & Co., Bridgwater, Somerset; Hill Bros, Ulsterton, Doncaster.

Building blocks.—Moler Fireproof Brick & Partition Co., Ltd., London, S.W.

Casements.—Messrs. Williams & Williams, Ltd., London, W.C.

Grates.—Dorrator Iron Co., Ltd., Falkirk.

Gutters.—Messrs. A. B. Macfie & Co., Ltd., St. Rollox, Glasgow.

Ironmongery.—J. Parkes & Sons, Ltd., Willenhall.

Pipes.—The Clay Cross Co., Ltd., Clay Cross, near Chesterfield.

Ranges.—A. Ballantiene, Bo'ness; Messrs. Wm. Barraclough, Stanningley; The Ferrybridge Foundry, Ferrybridge; The Dorrator Iron Co., Falkirk; Hattersley Bros., Ltd., near Rotherham.

Slates.—The Aberfoyle Slate & Quarry Co., Ltd., Glasgow; The Aston Junction Co., Ltd., Birmingham; Messrs. R. Adlard & Son, Bermondsey, S.E.; Mr. A. W. Adlard, London, S.W.; Mr. E. Parkinson, London, N.

Tank.—Messrs. G. A. Harvey & Co., Woolwich, S.E.

Tiles.—Mr. F. E. Carter, Exmouth; Ellis, Partridge & Co., Ltd., Leicester; Thomas Mitchell & Sons, Guildford; North Wales Brick & Tile Co., Ltd., Ruabon, North Wales; W. T. Jackson, London, E.C.; Carl Charlton, Northampton; Messrs. Fergusson & Sons, Leicester.

Wall Ties.—H. F. Shaw, Old Hill, Staffs.

MOLD.—For the erection of 54 houses, for the U.D.C. Mr. F. A. Roberts, architect, Earl Chambers Mold :—

*T. Roberts & Co., Mold	£58,020 0 0
W. H. Davey & Co., Runcorn	59,700 0 0
Wm. Asbury, Shotton	63,086 12 11
Jones & Hough, Birkenhead	66,391 0 0
Wm. Griffiths, Sons & Cromwell, Liverpool	73,404 0 0

NEWHAVEN.—For the erection of 14 houses at South Heighton, for the R.D.C. :—

*Beswarwick & Bonner	£5,794 14

NORTHAMPTON.—For work at the Technical School, for the Corporation :—

*Beardsmore & West	£320 0 0
C. R. King	325 1 10
W. E. Cockerill	360 0 0
Archer & Son	378 0 0
E. Green & Son	434 0 0

NORTHAMPTON.—For drainage work at 22 to 28, Shakespeare-road, for the Corporation :—

*A. P. Hawton & Sons	£127

NORTHAMPTON.—For painting, &c., at Phipps Baths, for the Corporation :—

*A. G. Godwin	£429

PRESTON.—For drains, paths, fences, &c., at Holme Slack and Ribbleton housing sites, for the T.C. :—

*T. Croft & Sons	£22,862

PLYMOUTH.—Supply of tar-mixer and dryer, to the T.C. :—

*Ransome's	£4,528

ROTHERHAM.—Erection of superintendent's house at Doncaster-road, for the T.C. :—

*E. T. Small & Co.	£1,085

SOUTHEND-ON-SEA.—Supply of steel frame windows for Thorpe Bay sub-station, for the T.C. :—

*Williams, Garrons & Co., Chester.... £151

SOUTHEND-ON-SEA.—For supply of concrete mixing plant, for the T.C. :—

*Millars Trading Co., London..... £300

STOCKTON-ON-TEES.—For the erection of three public urinals at Haverton Hill, for the R.D.C. :—No tenders received.

WALTHAMSTOW.—For painting work, &c., for the E.C. Mr. H. Prosser, M.S.A., Architect to the Committee :—

Painting, distempering and varnishing the interior of the Chapel End School—

CONTRACT NO. 1.

*Lucas Bros., Walthamstow.....	£631	0
J. & J. Dean, Walthamstow.....	649	0
F. E. McBride, Walthamstow.....	767	10
E. Fuller & Son, Walthamstow....	795	0
A. G. Barton, Walthamstow.....	824	0
J. Sands, Walthamstow.....	860	0
S. Blow, Ltd., Tower Hill.....	934	10

CONTRACT NO. 2.

*F. E. McBride, Walthamstow....	257	9
Lucas Bros., Walthamstow.....	289	0
E. Fuller & Son, Walthamstow....	330	0
J. Sands, Walthamstow	340	0
J. & J. Dean, Walthamstow.....	345	0
S. Blow, Ltd., Tower Hill.....	364	10
A. G. Barton, Walthamstow.....	395	0

For painting, distempering and varnishing, &c., to the interior of the Board Room and Offices of the Committee—

*J. Sands, Walthamstow	£206
J. & J. Dean, Walthamstow.....	240

For additions to Out-Offices at the Markhouse-road Girls' School—

*J. & J. Dean, Walthamstow.....	£265
J. Sands, Walthamstow	350

WAR OFFICE.—For building works for the War Office (accepted during November) :—

*J. Dowling, Dublin—Erection of married soldiers' quarters at Curragh Camp.

*O'Mahony, Fermoy—Erection of married soldiers' quarters at Moore Park.

*Waller Housing Corporation, Ltd., London—Erection of married quarters at Winchester.

*G. H. Pillatt & Son, Nottingham—Erection of huts at Whaltington Barracks.

*H. Farrow, London—Repairs to roof, Deptford.

WEST ASHFORD.—Erection of 24 houses at Willesborough, for the R.D.C. :—

*Wood, London..... £22,000

Wages Dispute at Bideford.

The skilled men in the Bideford area belonging to the Federated Building Trades Union have asked for an increase in wages of 1½d. per hour, bringing the minimum rate up to 1s. 10½d., as at Barnstaple. The Employers' Federation have refused to concede the demand.

TRADE NEWS.

An illustrated price list issued by the Invicta Fencing Co., of Borough-green, Kent, will be of interest to landowners, estate agents, and others concerned with the enclosure of land. The list includes cleft pale fencing in four styles for different purposes, rustic (or diamond) fencing, park panels, and sheep gates; an automatic fence strainer, which can be operated by one man, is also illustrated.

The British Steel Piling Co., of Dock House, Billiter-street, E.C., have issued a small pocket book containing within a small compass a great deal of information of a technical nature of interest to engineers dealing with pile-driving operations. Many useful tables and calculations are also included.

The Vaughan Crane Co., Ltd., of Openshaw, Manchester, have issued an illustrated booklet showing the various types of overhead electric cranes, blocks and hoists, and hand cranes and pulley blocks which they manufacture. The overhead travelling cranes shown are of various sizes, including one with a carrying capacity up to 200 tons. The electric pulley block cranes are made in sizes up to 4½ tons capacity, and some useful bogie-type electric blocks for running on a rolled-steel joist track are also illustrated. Among the hand-power overhead travellers are shown a simply constructed crane made in sizes from 10 cwt. to 10 tons lifting capacity; a double girder type made in sizes from 1 ton to 30 tons capacity; and a 20 ton double-girder type with a span of 50 ft. specially made for use in power houses. A hand power wall jib crane with travelling pulley block, made in sizes from 5 cwt. to 5 tons, is also shown, as are also several worm-gear pulley blocks, runway trolleys, and overhead runway installations.

The utilisation of waste products is receiving considerable attention from local authorities and manufacturers just now, mostly in the direction of burning the waste and making use of the heat generated therefrom. In this connection, the second edition of *Meldrums' Magazine*, published by Messrs. Meldrums, Ltd., of Timperley, will be of interest. This firm has for many years specialised in the manufacture of refuse destructors, and the booklet illustrates such plant already installed in this country and abroad for dealing with waste products and using the heat for a variety of purposes.

Messrs. Robert Jenkins & Co., Ltd., of Rotherham, have published a new list of range boilers, the prices of which show a considerable reduction compared with previous lists.

The structural side of Messrs. Steavenson & Co.'s business has been combined with the business of Humphries' Patent Bracket and Scaffold Syndicate, Ltd., and the title and address of the combined concern is now Humphries, Hollom, Ltd., Osier Ironworks, Point Pleasant, Wandsworth, S.W.

The Standardisation and Construction Committee of the Ministry of Health has informed Mr. I. Rasanen, of 12 and 13, Poultry, E.C. 2, that it does not object to the installation in State-aided housing schemes of the "Ilmanne" system of central heating, of which Mr. Rasanen is the proprietor, and which we recently described.

The net profits of the London County Westminster and Parr's Bank, Ltd., for the past year, after providing for bad and doubtful debts and all expenses, amount to £2,915,708, which, added to £414,226 brought forward from 1919, leaves available the sum of £3,329,934. The dividend of 10 per cent. paid in August last on the £20 shares, and 6¼ per cent. on the £1 shares, absorb £557,651. A further dividend of 10 per cent. is now declared in respect of the £20 shares, making 20 per cent. for the year; and a further dividend of 6¼ per cent. on the £1 shares will be paid, making the maximum of 12½ per cent. for the year. £1,300,000 has been set aside for investment depreciation, £200,000 transferred to premises account, and £253,718 to reserve, bringing the reserve up to £9,003,718, and leaving a balance of £460,914 to be carried forward.

"McLeod" Construction.

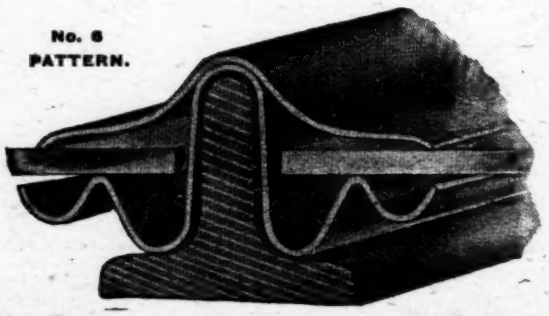
The "McLeod" system of concrete construction, described and illustrated in our last issue, has now been approved by the Ministry of Health for use on housing schemes.

War Memorials, Church Tablets, Celtic Crosses,
in Stone, Marble, or Granite. Designs Free.
MARBLE SHOPFITTINGS & STEPS.
KELLY & CO.
(Cramb Bros.) Ltd.
129, Marylebone Road, N.W.1
Phone: "Padd. 5518."

FOR BUILDERS' PLANT of all kinds H. Johnston Thomas 11 Duke Street London Bridge, S.E.1 'Phone HOP 3502

J. J. ETRIDGE, Jr. Ltd
SLATING AND TILING
SLATE MERCHANTS
CONTRACTORS.
Inspections and Reports made on
OLD OR FAULTY ROOFS
in any part of the country.
Telephone; Avenue 4649 (two lines), or write.
Bethnal Green Slate Works,
BETHNAL GREEN, LONDON, E.

JAPANESE OAK
FLOORING P.T. & G. FOR SECRET NAILING
SYDNEY PRIDAY
25, Monument Street, E.C.3
Telephone Nos.: AVENUE 667 & 4817

BRABY'S "DROP-DRY" GLAZING
ECONOMICAL. EFFECTIVE.
ESTIMATES FREE.
ALSO No. 8 PATTERN WITH WOOD CORE.
No. 8 PATTERN.

MANY THOUSANDS OF FEET FIXED TO ROOFS OF FACTORIES, WAREHOUSES, &c.
LOWEST PRICES.
F. BRABY & CO., LTD., 352-364, EUSTON RD., LONDON, N.W.1
Telegrams: "Courteous, Euskead, London." AND AT LIVERPOOL, BRISTOL, GLASGOW, FALKIRK, &c. Telephone No.: Museum 3032 (5 Lines)